Dell™ OptiPlex™ 760 Service Manual

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Advanced Features

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LegacySelect Technology Control

LegacySelect technology control offers legacy-full, legacy-reduced, or legacy-free solutions based on common platforms, hard drive images, and help desk procedures. Control is provided to the administrator through system setup, Dell OpenManage™ IT Assistant, or Dell custom-factory integration.

LegacySelect allows administrators to electronically activate or deactivate connectors and media devices that include serial and USB connectors, a parallel connector, a floppy drive, PCI slots, and a PS/2 mouse. Connectors and media devices that are deactivated make resources available. You must restart the computer to effect the changes.

Manageability

DASH

DASH (Desktop and mobile Architecture for System Hardware) is a Desktop Management Task Force (DMTF) management initiative that standardizes the manageability interfaces for mobile and desktop hardware. The focus of the DASH architecture is to enable the remote management of desktop and mobile computing resources in a standard manner that is independent of operating state. Your computer supports early versions of the DASH initiative including the following management profiles:

- Base Desktop Mobile
- Power State Management
- Boot Control
- CPU
- System Memory
- Fan
- Power Supply
- Sensor
- Physical Asset
- Software Inventory

NOTE: If you have chosen to use "None" (no manageability) or ASF, you will be unable to take advantage of DASH features and profiles.

Active Management Technology

Intel Active Management Technology (iAMT) provides secure systems management capabilities that reduce IT costs and allow better discovery, healing, and protection of networked computing assets. With iAMT, computers can be managed regardless of whether the computer is on, off, or the operating system is hung.

NOTE: iAMT can be configured using Dell Client Manager (DCM) 2.1.1 or later. For complete information on how to configure iAMT, see the Dell Client Manager 2.1.1 (or later) documentation on **www.dell.com\openmanage**. For more information about Dell's iAMT implementation, see the *Client Systems Management Administrator's Guide* available on the Dell Support website at **support.dell.com**.

Key benefits of iAMT are:

- Reduced desk-side visits
- Automation of more management functionality through enablement of systems management console software
- Improved security

iAMT Features

Basic Functionality

- Ability to discover, track, and inventory assets in the presence or absence of the operating systems. The computer must have the power cable connected and must be connected to the network.
- Ability to power on and power off the computer remotely, whatever the state of the operating system.

Advanced Functionality

NOTE: Additional management software and purchasing options are required for some of the following features.

- Ability to do remote issues remediation (1-to-1) via text-based console redirection (Serial-over-LAN) and IDE redirection.
- Hardened security via agent presence (enables detection of removed agents) and network access control (Circuit breaker) and software version control

Your computer aids in troubleshooting iAMT by providing the following iAMT related error messages:

Error Message	Description
SERVICE_MODE jumper: The service mode jumper is installed	Do not populate the SERVICE_MODE jumper. AMT will not function properly. Only manufacturing uses this jumper.
MEMORY: Unsupported memory configuration. Populate DIMM1.	Unable to launch ME. AMT functionality is broken when DIMM1 is not populated.

Out of Band Management

The term "out of band" refers to the ability to manage the computer in the absence of an operating system or with the operating system in an unusable state, or with the computer powered off. The only requirement for managing such a computer is for AMT capability to be enabled and a network cable plugged into the integrated network adapter.

NOTE: Power is supplied to the DIMMs even when the computer is turned off.

Accessing iAMT setup

Intel's Management Engine BIOS Extension (MEBx) interface controls the iAMT features and setup options for your computer. MEBx is used to:

- Turn on or off iAMT
- Set iAMT modes
- Set iAMT configuration modes

To view the MEBx setup screen, press <Ctrl><p**>** during the boot process of your computer when you turn it on. Your default MEBx password is **admin**.

NOTE: To make configuration setting changes, the default MEBx password must be changed.

Turning Off iAMT

iAMT is enabled in the Management Engine (ME) firmware by default. However, you may choose to turn off the iAMT feature.

To turn off iAMT:

1. Press <Ctrl-P> to enter the MEBx setup and enter your password.
2. Select **Intel® ME Configuration**→ **Intel ME Features Control** → **Manageability Feature Selection**
3. Select **None**.
4. Select **Return to Previous Menu** twice.

   Changes are applied and the computer reboots.

USB Provisioning

iAMT can be provisioned using a USB key and Dell Client Manager. The USB key must:

- Be formatted using the FAT16 file system with no system files
- Contain only the **setup.bin** file

NOTE: The key should not be bootable.

To provision AMT using a USB key, plug the USB key into a USB port prior to boot. During POST, the BIOS displays a message stating that the computer is being provisioned.

Alert Standard Format

Alert Standard Format (ASF) is a DMTF management standard that specifies "pre-operating system" or "operating system-absent" alerting techniques. The standard is designed to generate an alert on potential security and fault conditions when the operating system is in a sleep mode or the computer is turned off. ASF is designed to supersede previous operating-system-absent alerting technologies.

Your computer supports the following ASF version 1.03 and 2.0 alerts and remote capabilities:

Alert	Description
Chassis: Chassis Intrusion – Physical Security Violation/Chassis Intrusion – Physical Security Violation Event Cleared	The computer chassis with the chassis intrusion feature (optional on some computers) installed and enabled has been opened or the chassis intrusion alert has been cleared.
CPU: Emergency Shutdown Event	The processor temperature is too hot and the power supply has shut down.
Cooling Device: Generic Critical Fan Failure/Generic Critical Fan Failure Cleared	The fan speed (rpm) is out of limits or the fan speed (rpm) problem has been resolved.
Temperature: Generic Critical Temperature Problem/Generic Critical Temperature Problem Cleared	The computer temperature is out of limits or the computer temperature problem has been resolved.
Battery Low	The computer battery has reached a voltage of 2.2 V or lower.

ASF allows Remote Management and Control Protocol (RMCP) messages to be exchanged between a remote management console and a client computer that is in a "pre-operating system" or "operating system-absent" state. RMCP messages can be sent to instruct a client computer to start up, shut down, or restart.

For more information about Dell's ASF implementation, see the *ASF User's Guide* and the *ASF Administrator's Guide*, which are available on the Dell Support website at **support.dell.com**.

Dell OpenManage™ Applications

NOTE: Either Dell OpenManage™ applications and Dell™ Client Manager (DCM) are available for your computer to help meet your system management needs. See Dell Client Manager (DCM) for information about DCM.

You can manage your computer via IT Assistant and Dell OpenManage Client Instrumentation (OMCI).

IT Assistant configures, manages, and monitors computers and other devices on a corporate network. IT Assistant manages assets, configurations, events (alerts), and security for computers equipped with industry-standard management software. It supports instrumentation that conforms to SNMP and CIM industry standards.

For information on IT Assistant, see the *Dell OpenManage IT Assistant User's Guide* available on the Dell Support website at **support.dell.com**.

Dell OpenManage Client Instrumentation is software that enables remote management programs such as IT Assistant to do the following:

- Access information about your computer, such as how many processors it has and what operating system it is running.
- Monitor the status of your computer, such as listening for thermal alerts from temperature probes or hard drive failure alerts from storage devices.

A computer that has Dell OpenManage Client Instrumentation set up on a network that uses IT Assistant is a managed computer. For information about Dell OpenManage Client Instrumentation, see the *Dell OpenManage Client Instrumentation User's Guide* available on the Dell Support website at **support.dell.com**.

Dell Client Manager (DCM)

NOTE: Either Dell™ Client Manager (DCM) or Dell OpenManage™ applications are available for your computer to help meet your system management needs. See Dell OpenManage™ Applications for information about Dell OpenManage products.

Dell Client Manager (DCM) Console

The Dell Client Manager (DCM) console allows you to configure, manage, and monitor Dell computers on a corporate network via a simple GUI interface. Through the DCM console you can manage assets, configurations, events (alerts), status, and security for computers equipped with industry-standard management software. For information about standards supported by DCM, see **www.altiris.com**.

For information about the DCM console, see **www.altiris.com** or the Dell Support website at **support.dell.com**.

The DCM console also allows you to:

- Access information about your computer, such as how many processors it has and what operating system it is running.
- Monitor the status of your computer, such as listening for thermal alerts from temperature probes or hard drive failure alerts from storage devices.
- Change the state of your computer by updating its BIOS, configuring BIOS settings, or shutting it down remotely.

With Dell Client Manager installed on a console and its client software installed on client computers, you have a managed computer. For information about DCM, see the Dell Support website at **support.dell.com**.

Physical Security

Chassis Intrusion Detection

NOTE: When the administrator password is enabled, you must know the administrator password before you can reset the **Chassis Intrusion** setting.

This (optional on some computers) feature, if installed and enabled, detects that the chassis was opened and alerts the user. To change the **Chassis Intrusion** setting:

1. Enter the system setup (see Entering System Setup).
2. Select **Security** →**Chassis Intrusion**
3. Click to select an option setting.
4. Exit and save system setup.

Option Settings

- **On** — If the computer cover is opened, the setting changes to **Detected**, and the following alert message displays during the boot routine at the next computer start-up:

  `Alert! Cover was previously removed.`

  To reset the **Detected** setting,

  a. Enter system setup (see Entering System Setup).

  b. Select **Security** →**Chassis Intrusion** and then select the **Clear Intrusion Warning** option to reset the chassis intrusion detector. Change the setting to **On**, **On-Silent**, or **Disabled**.

  NOTE: The default setting is **On-Silent**.

  c. Save your BIOS settings and exit system setup.

- **On-Silent** (default setting) — If the computer cover is opened, the setting changes to **Detected**. No alert message appears during the boot sequence at the next computer start-up.
- **Off** — No intrusion monitoring occurs and no messages appear.

Padlock Ring and Security Cable Slot

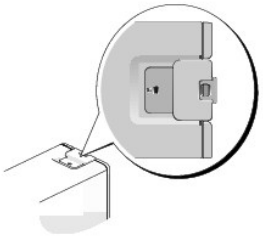
Use one of the following methods to secure your computer:

- Use a padlock alone or a padlock and looped security cable with the padlock ring.

  A padlock alone prevents the computer from being opened.

  A security cable looped around a stationary object is used in conjunction with a padlock to prevent unauthorized movement of the computer.

- Attach a commercially available antitheft device to the security cable slot on the top of the computer.



NOTE: On the ultra small form factor computer, the security cable slot is located on the back of the computer (see the *Setup and Quick Reference Guide* that ships with your computer for more information).

NOTE: Before you purchase an antitheft device, make sure that it works with the security cable slot on your computer.

Antitheft devices usually include a segment of metal-stranded cable with an attached locking device and key. The documentation that comes with the device contains instructions for installing it.

Trusted Platform Module (TPM)

NOTE: Computers shipping into China are not equipped with TPM.

NOTE: The TPM feature supports encryption only if the operating system supports TPM. For more information, see the TPM software documentation and the help files that came with the software.

TPM is a hardware-based security feature that can be used to create and manage computer-generated encryption keys. When combined with security software, the TPM enhances existing network and computer security by enabling features such as file protection capabilities and protected e-mail. The TPM feature is enabled through a system setup option.

CAUTION: To secure your TPM data and encryption keys, follow the backup procedures documented in the *Archive and Restore* **section of the EMBASSY Security Center help file. In the event of these backups being incomplete, lost, or damaged, Dell will be unable to assist in the recovery of encrypted data.**

Enabling the TPM Feature

1. Enable the TPM software:
    a. Enter System Setup (see Entering System Setup).
    b. Select **Security→ TPM Security** and press <Enter>.
    c. Under **TPM Security**, select **On**.
    d. Save and exit the system setup program.
2. Activate the TPM setup program:
    a. Enter System Setup (see Entering System Setup).
    b. Select **Security→ TPM Activation** and press <Enter>.
    c. Under **TPM Activation**, select **Activate** and press <Enter>.

NOTE: You only need to activate TPM once.

    d. Once the process is complete, the computer either restarts automatically or prompts you to restart your computer.

Security Management Software

The security management software is designed to utilize four different features to help you secure your computer:

- Log-in management
- Pre-boot authentication (using a fingerprint reader, smart card, or password)
- Encryption
- Private information management

For information about how to use the software and the different security features, see *Getting Started Guide* for the software:

Click **Start→ All Programs→ Wave Systems Corp→ Getting Started Guide**.

Computer Tracking Software

Computer tracking software may enable you to locate your computer if it is lost or stolen. The software is optional and may be purchased when you order your Dell™ computer, or you can contact your Dell sales representative for information about this security feature.

NOTE: Computer tracking software may not be available in certain countries.

NOTE: If you have computer tracking software and your computer is lost or stolen, you must contact the company that provides the tracking service to report the missing computer.

About Smart Cards and Fingerprint Readers

NOTE: The smart card feature or fingerprint reader may not be available on your computer.

Smart cards are portable credit-card shaped devices with internal integrated circuits. The top surface of the smart card usually contains an embedded processor under the gold contact pad. The combination of the small size and integrated circuits make smart cards valuable tools for security, data storage, and special programs. Using smart cards can improve computer security by combining something a user has (the smart card) with something only the user should know (a PIN) to provide more secure user-authentication than passwords alone.

The fingerprint reader is a device that you can use to help keep your Dell™ computer secure. The reader is a strip sensor located on a peripheral device for your computer. When you slide your finger over the reader, it uses your unique fingerprint to authenticate your user identity.

Hyperthreading and Multi-Core Technology

Hyperthreading is an Intel technology that can enhance overall computer performance by allowing one physical processor to function as two logical processors that are capable of performing certain tasks simultaneously. Multi-core processors contain two or more physical computational units inside a single CPU package, thereby increasing computing efficiency and multi-tasking ability. Intel has implemented this technology in its Dual-Core and Quad-Core processors. These processors have two and four computational units respectively. It is recommended that you use the Microsoft Windows XP Service Pack 1 (SP1) or higher or Windows Vista operating systems which are optimized to take advantage of these technologies.

While many programs can benefit from hyperthreading and multi-core technology, some programs may have not been optimized for them and may require an update from the software manufacturer. Contact the software manufacturer for updates and information about using hyperthreading or multi-core technology with your software. To determine if your computer is using hyperthreading technology, check the system setup option for hyperthreading (see System Setup).

Power Management for Windows XP and Windows Vista

Options in Windows XP

The Microsoft Windows XP power management features can reduce the amount of electricity your computer uses when it is on and you are not using it. You can reduce power to just the monitor or the hard drive, or you can use standby mode or hibernate mode to reduce power to the entire computer. When the computer exits from a power conservation mode, it returns to the operating state it was in prior to entering the mode.

NOTE: Windows XP Professional includes security and networking features not available in Windows XP Home Edition. When a Windows XP Professional computer is connected to a network, different options related to security and networking appear in certain windows.

NOTE: The procedures to activate the standby and hibernate modes may vary according to your operating system.

Standby Mode

Standby mode conserves power by turning off the display and the hard drive after a designated period of time, known as a time-out. When the computer exits from standby mode, it returns to the operating state it was in prior to entering standby mode.

CAUTION: If your computer loses power while in standby mode, it may lose data.

To set standby mode to automatically activate after a defined period of inactivity:

1. Click **Start→ Control Panel→ Pick a category→ Performance and Maintenance**.
2. Under **or pick a Control Panel icon**, click **Power Options**.

To immediately activate standby mode without a period of inactivity, click **Start→ Turn Off Computer→ Stand by**.

To exit from standby mode, press a key on the keyboard or move the mouse.

Hibernate Mode

Hibernate mode conserves power by copying system data to a reserved area on the hard drive, and then completely turning off the computer. When the computer exits from hibernate mode, the desktop is restored to the state it was in prior to entering hibernate mode.

To activate hibernate mode:

1. Click **Start→ Control Panel→ Pick a category→ Performance and Maintenance**.
2. Under **or pick a Control Panel icon**, click **Power Options**.
3. Define your hibernate settings on the **Power Schemes** tab, **Advanced** tab, and **Hibernate** tab.

To exit from hibernate mode**,** press the power button. The computer may take a short time to exit from hibernate mode. Because the keyboard and mouse do not function in hibernate mode, pressing a key on the keyboard or moving the mouse does not bring the computer out of hibernation.

Because hibernate mode requires a special file on your hard drive with enough disk space to store the contents of the computer memory, Dell creates an appropriately sized hibernate mode file before shipping the computer to you. If the computer's hard drive becomes corrupted, Windows XP recreates the hibernate file automatically.

Power Options Properties

Define your standby mode settings, hibernate mode settings, and other power settings in the **Power Options Properties** window. To access the **Power Options Properties** window:

1. Click **Start→ Control Panel→ Pick a category→ Performance and Maintenance**.
2. Under **or pick a Control Panel icon**, click **Power Options**.
3. Define your power settings on the **Power Schemes** tab, **Advanced** tab, and **Hibernate** tab as described in the following sections.

Power Schemes Tab

Each standard power setting is called a scheme. If you want to select one of the standard Windows schemes installed on your computer, choose a scheme from the **Power schemes** drop-down menu. The settings for each scheme appear in the fields below the scheme name. Each scheme has different settings for starting standby mode, hibernate mode, turning off the monitor, and turning off the hard drive.

△ **CAUTION: If you set the hard drive to time-out before the monitor does, your computer may appear to be locked up. To recover, press any key on the keyboard or click the mouse. To avoid this problem, always set the monitor to time-out before the hard drive.**

The **Power schemes** drop-down menu displays the following schemes:

- **Always On** (default) — If you want to use your computer with no power conservation.
- **Home/Office Desk** — If you want your home or office computer to run with little power conservation.
- **Portable/Laptop** — If your computer is a portable computer that you use for traveling.
- **Presentation** — If you want your computer to run without interruption (using no power conservation).
- **Minimal Power Management** — If you want your computer to run with minimal power conservation.
- **Max Battery** — If your computer is a portable computer and you run your computer from batteries for extended periods of time.

If you want to change the default settings for a scheme, click the drop-down menu in the **Turn off monitor**, **Turn off hard disks**, **System stand by**, or **System hibernates** field, and then select a time-out from the displayed list. Changing the time-out for a scheme field permanently changes the default settings for that scheme, unless you click **Save As** and enter a new name for the changed scheme.

Advanced Tab

The **Advanced** tab allows you to:

- Place the power options icon in the Windows task bar for quick access.
- Set the computer to prompt you for your Windows password before the computer exits from standby mode or hibernate mode.
- Program the power button to activate standby mode, activate hibernate mode, or turn off the computer.

To program these functions, click an option from the corresponding drop-down menu and click **OK**.

Hibernate Tab

The **Hibernate** tab allows you to enable hibernate mode. If you want to use the hibernate settings as defined on the **Power Schemes** tab, click the **Enable hibernate support** check box on the **Hibernate** tab.

For more information on power management options:

1. Click **Start→ Help and Support→ Performance and maintenance**.
2. In the **Performance and maintenance** window, click **Conserving power on your computer**.

Options in Windows Vista

The Microsoft Vista power management features can reduce the amount of electricity your computer uses when it is on and you are not using it. You can reduce power to just the monitor or the hard drive, or you can use sleep mode or hibernate mode to reduce power to the entire computer. When the computer exits from a power conservation mode, it returns to the operating state it was in prior to entering the mode.

Sleep Mode

Sleep mode conserves power by turning off the display and the hard drive after a predetermined period of inactivity (a time-out). When the computer exits sleep mode, it returns to the same operating state it was in before entering sleep mode.

To enter sleep mode in Windows Vista, click **Start** , click the arrow in the lower-right corner of the Start menu, and then click **Sleep**.

To exit sleep mode, press a key on the keyboard or move the mouse.

Hibernate Mode

Hibernate mode conserves power by copying system data to a reserved area on the hard drive and then completely turning off the computer. When the computer exits hibernate mode, it returns to the same operating state it was in before entering hibernate mode.

To manually enter hibernate mode in Windows Vista, click **Start** , click the arrow in the lower-right corner of the Start menu, and then click **Hibernate**.

Configuring Power Management Settings

You can use the Windows Power Options Properties to configure the power management settings on your computer.

To access Power Options Properties, click **Start** → **Control Panel**→ **System and Maintenance**→ **Power Options**.

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Battery

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Replacing the Battery

Replacing the Battery

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

A coin-cell battery maintains computer configuration, date, and time information. The battery can last several years.

The battery may need replacing if an incorrect time or date is displayed during the boot routine along with a message such as:

```
Time-of-day not set - please run SETUP program
```

or

```
Invalid configuration information -
please run SETUP program
```

or

```
Strike the F1 key to continue,
F2 to run the setup utility
```

To determine whether you need to replace the battery, reenter the time and date in system setup and exit the program to save the information. Turn off your computer and disconnect it from the electrical outlet for a few hours; then reconnect the computer, turn it on, and enter system setup (see Entering System Setup). If the date and time are not correct in system setup, replace the battery.

You can operate your computer without a battery; however, without a battery, the configuration information is erased if the computer is turned off or unplugged from the electrical outlet. In this case, you must enter system setup (see Entering System Setup) and reset the configuration options.

WARNING: A new battery can explode if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

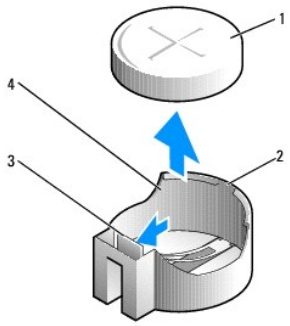
To remove the battery:

1. If you have not already done so, make a copy of your configuration information, found in system setup.
2. Follow the procedures in Working on Your Computer.
3. Remove the computer cover.
4. Locate the battery socket.

CAUTION: If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Ensure that the object is inserted between the battery and the socket before you attempt to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.

CAUTION: To avoid damage to the battery connector, you must firmly support the connector while removing the battery.

5. Remove the system battery.
   a. Support the battery connector by pressing down firmly on the positive side of the connector.
   b. While supporting the battery connector, press the battery tab away from the positive side of the connector and pry the battery it up out of the securing tabs at the negative side of the connector.



1	system battery	2	positive side of battery connector
3	battery socket tab	4	battery socket

6. Install the new system battery.
    a. Support the battery connector by pressing down firmly on the positive side of the connector.
    b. Hold the battery with the "+" facing up, and slide it under the securing tabs at the positive side of the connector.
    c. Press the battery straight down into the connector until it snaps into place.
7. Replace the computer cover (see Replacing the Computer Cover).
8. Enter system setup (see Entering System Setup) and restore the settings you recorded in step 1.
9. Properly dispose of the old battery as described in the safety instructions that ship with your computer.

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Working on Your Computer

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- Recommended Tools
- Before Working on Your Computer
- After Working on Your Computer

This document provides procedures for removing and installing the components in your computer. Unless otherwise noted, each procedure assumes that:

- You have performed the steps in this section.
- You have read the safety information that shipped with your computer.
- When replacing a component, you have already removed the original, if installed.

NOTE: The color of your computer and certain components may appear differently than shown in this document.

Recommended Tools

The procedures in this document may require the following tools:

- Small flat-blade screwdriver
- Phillips screwdriver
- Small plastic scribe
- Flash BIOS update (see the Dell Support website at **support.dell.com**)

Before Working on Your Computer

Use the following safety guidelines to help protect your computer from potential damage and to help ensure your own personal safety.

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: Only a certified service technician should perform repairs on your computer. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

CAUTION: To avoid damaging the computer, perform the following steps before you begin working inside the computer.

1. Ensure that the work surface is flat and clean to prevent the computer cover from being scratched.
2. Turn off your computer (see Turning Off Your Computer).

CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

3. Disconnect all telephone or network cables from the computer.
4. Disconnect your computer and all attached devices from their electrical outlets.
5. Press and hold the power button while the system is unplugged to ground the system board.

CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.

Turning Off Your Computer

CAUTION: To avoid losing data, save and close all open files and exit all open programs before you turn off your computer.

1. Shut down the operating system.
2. Ensure that the computer and all attached devices are turned off. If your computer and attached devices did not automatically turn off when you shut down your operating system, press and hold the power button for about 4 seconds to turn them off.

After Working on Your Computer

After you have completed any replacement procedures, ensure that you connect any external devices, cards, cables, and so on, before turning on your computer.

1. Replace the computer cover (see Replacing the Computer Cover).
2. Connect any telephone or network cables to your computer.

CAUTION: To connect a network cable, first plug the cable into the network device and then plug it into the computer.

3. Connect your computer and all attached devices to their electrical outlets.
4. Turn on your computer.
5. Verify that the computer works correctly by running the Dell Diagnostics (seeDell Diagnostics).

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Desktop Computer

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Replacing the Computer Cover

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Models: DCTR, DCNE, DCSM, and DCCY

February 2009 Rev. A01

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Dell™ OptiPlex™ 760 Service Manual

- Cards

Cards

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

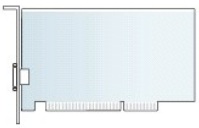
CAUTION: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintains the airflow that cools your computer.

Your Dell™ computer provides the following connectors on the system board for PCI and PCI Express cards:

- Two connectors for low-profile PCI cards
- One connector for a low-profile PCI Express x16 card

NOTE: Your Dell computer includes only PCI and PCI Express card connectors. ISA cards are not supported.

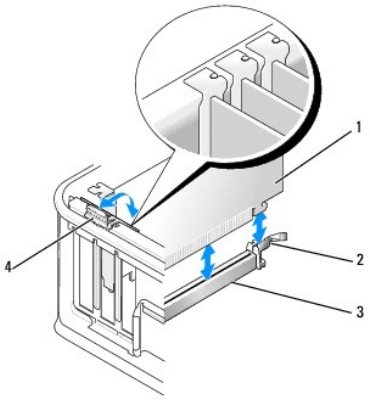
PCI Cards



Installing a PCI Card

If you are replacing a PCI card, remove the current driver for the card from the operating system. See the documentation that came with the card for information.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently lift the release tab on the card-retention latch all the way up.



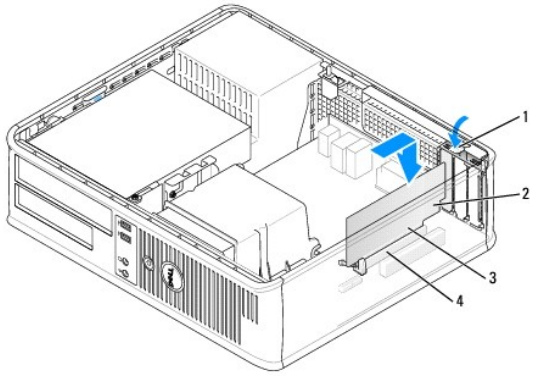
1	card	2	retention latch
3	system board connector	4	release tab

4. If you are installing a card in an empty card connector on the system board, remove the filler bracket to create a card-slot opening at the back of the computer. Then continue with step 6.

5. If you are installing a card to replace one already installed in the computer, remove the installed card (see Removing a PCI Card).

6. Prepare the card for installation.

NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer.

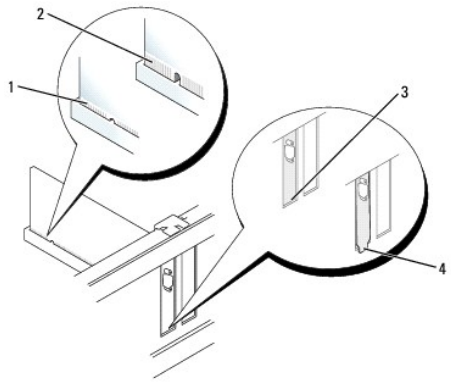


1	release tab on card-retention latch	2	card
3	card-edge connector	4	card connector

WARNING: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

7. If you are installing a PCI Express x16 card, hold the securing-tab release lever away from the card connector as you insert the new card into the connector slot.

8. Place the card in the connector and press down firmly. Using the following illustration as a guide, ensure that the card is fully seated in the slot.



1	card fully seated	2	card not fully seated
3	bracket within slot	4	bracket caught outside of slot

NOTE: If you are installing a PCI Express x16 card, ensure that the securing tab on the connector's release lever fits into the notch on the front end of the card.

9. Gently rotate the release tab downward to move the card-retention latch into place to secure the cards.

CAUTION: Do not route card cables over or behind the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

10. Connect any cables that should be attached to the card.

11. Replace the computer cover (see Replacing the Computer Cover), reconnect the computer and devices to electrical outlets, and then turn them on.

CAUTION: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

12. If you installed a sound card:

    a. Enter system setup, select **System Configuration→ Miscellaneous Devices**, and change the **Audio** setting to **Disabled.** (See Entering System Setup).

    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.

CAUTION: If you disable the integrated network adapter, you will not have AMT functionality.

13. If you installed a network adapter card and want to turn off the integrated network adapter:

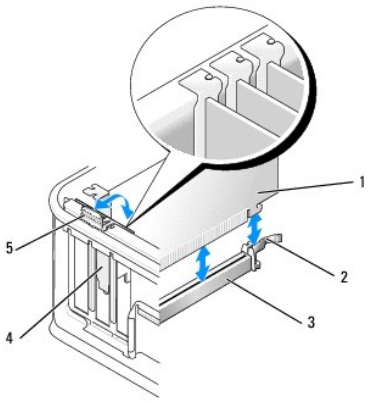
    a. Enter system setup, select **System Configuration→ Integrated NIC**, and change the setting to **Disabled** (see Entering System Setup).

    b. Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.

14. Install any drivers required for the card as described in the card documentation.

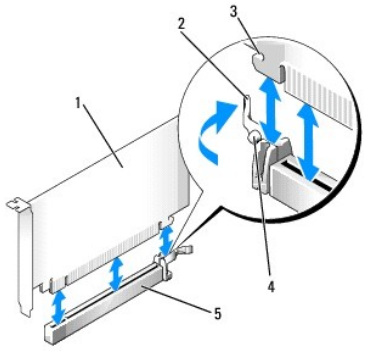
Removing a PCI Card

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently rotate lift the release tab on the card-retention latch.



1	card	2	card-retention latch
3	system board connector	4	card insert
5	release tab		

4. If necessary, disconnect any cables connected to the card.
5. If you are replacing a PCI Express x16 card, remove the installed card by gently pulling the release lever away from the card until you release the securing tab from the dent in the card.



1	PCI Express x16 card	2	release lever
3	securing slot (not all cards)	4	securing tab
5	PCI Express x16 card connector		

6. Grasp the card by its top corners, and ease it out of its connector.
7. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

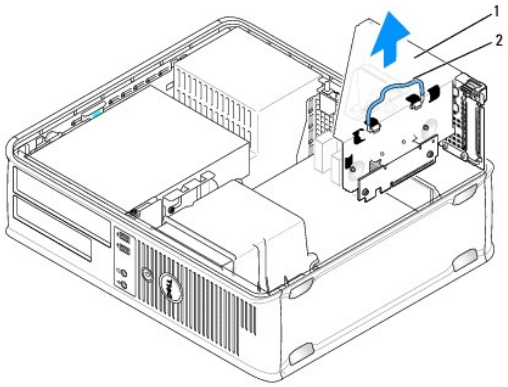
8. Rotate the release tab downward to snap the card-retention latch into place.

CAUTION: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

9. Replace the computer cover (see Replacing the Computer Cover), reconnect the computer and devices to electrical outlets, and then turn them on.
10. Uninstall the card's driver. See the documentation that came with the card for instructions.
11. If you removed a sound card:
    a. Enter system setup, select **System Configuration→ Miscellaneous Devices**, and change the **Audio** setting to **Enabled** (see Entering System Setup).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.
12. If you removed a network adapter card and want to turn on the integrated network adapter:
    a. Enter system setup, select **System Configuration→ Integrated NIC**, and change the setting to **Enabled** (see Entering System Setup).
    b. Connect the network cable to the integrated the back panel of the computer.

Removing a PCI Card From the Riser-Card Cage

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the riser-card cage:
    a. Check any cables connected to cards through the back panel openings. Disconnect any cables that will not reach the riser-card cage once they are removed from the computer.
    b. Gently pull on the handle and lift the riser-card cage up and away from the computer.

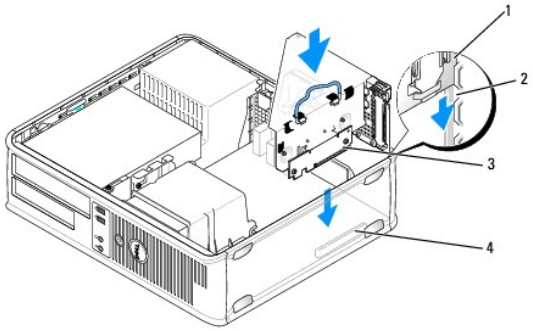


1	riser-card cage	2	handle

4. Press in on the tab to raise the card-retention latch.
5. If necessary, disconnect any cables connected to the card.
6. Grasp the card by its top corners, and ease it out of its connector.
7. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

8. Lower the card-retention latch and press it into place.
9. Replace the riser-card cage:
   a. Align the tabs in the side of the riser-card cage with the slots on the side of the computer, and slide the riser-card cage down into place.
   b. Ensure that the riser cards are fully seated in the connectors on the system board.



1	riser-card cage	2	slots
3	riser cards	4	system board connectors

10. Replace the computer cover (see Replacing the Computer Cover), reconnect the computer and devices to electrical outlets, and then turn them on.
11. Uninstall the card's driver. See the documentation that came with the card for instructions.
12. If you removed a sound card:
    a. Enter system setup, select **System Configuration→ Miscellaneous Devices**, and change the **Audio** setting to **Enabled.** (See Entering System Setup).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.

13. If you removed a network adapter card and want to turn on the integrated network adapter:

    a. Enter system setup, select **System Configuration→ Integrated NIC**, and change the setting to **Enabled**. (See Entering System Setup).

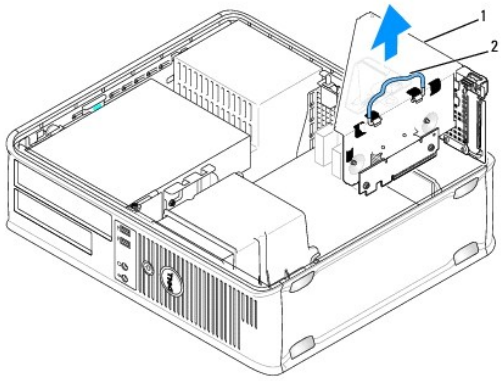
    b. Connect the network cable to the integrated the back panel of the computer.

Installing a PCI Card in the Riser-Card Cage

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. If applicable, remove the card installed in the SLOT2 connector on the system board.
4. Remove the riser-card cage:

    a. Check any cables connected to cards through the back panel openings. Disconnect any cables that will not reach the riser-card cage once they are removed from the computer.

    b. Gently pull on the handle and lift the riser-card cage up and away from the computer.



1	riser-card cage	2	handle

5. If you are installing a new card, remove the filler bracket to create an empty card-slot opening.

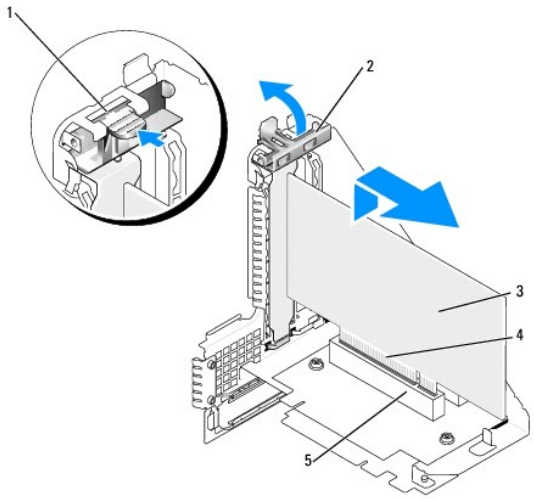
   If you are replacing a card that is already installed in the computer, remove the card. If necessary, disconnect any cables connected to the card. Grasp the card by its corners, and ease it out of its connector.

   NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer.

6. Prepare the new card for installation.

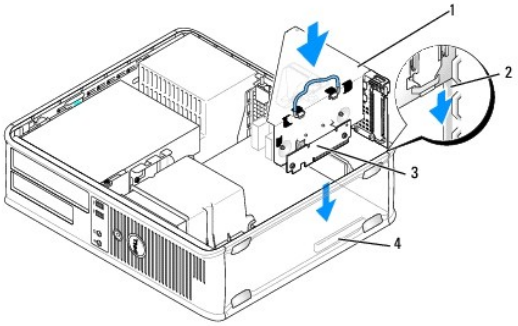
WARNING: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

7. Press the release tab to raise the card-retention latch.



1	release tab	2	card-retention latch
3	card	4	card-edge connector
5	card connector		

8. Insert the card firmly into the card connector on the riser-card cage.
9. Lower the card-retention latch and press it into place, securing the card(s) in the computer.
10. Replace the riser-card cage:
    a. Align the tabs in the side of the riser-card cage with the slots on the side of the computer, and slide the riser-card cage down into place.
    b. Ensure that the riser cards are fully seated in the connectors on the system board.



1	riser-card cage	2	slots
3	riser cards	4	system board connectors

11. Reconnect any cables that you removed in step 4.
12. Connect any cables that should be attached to the card.

CAUTION: Do not route card cables over or behind the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

13. Replace the computer cover (see Replacing the Computer Cover), reconnect the computer and devices to electrical outlets, and then turn them on.
14. If you installed a sound card:
    a. Enter system setup, select **System Configuration→ Miscellaneous Devices**, and change the **Audio** setting to **Disabled** (see Entering System Setup).

b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.

15. If you installed a network adapter card and want to turn off the integrated network adapter:

    a. Enter system setup, select **System Configuration→ Integrated NIC**, and change the setting to **Disabled**. (See Entering System Setup).

    b. Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.

CAUTION: If you disable the integrated network adapter, you will not have AMT functionality.

16. Install any drivers required for the card as described in the card documentation.

PS/2 Serial Port Adapter

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

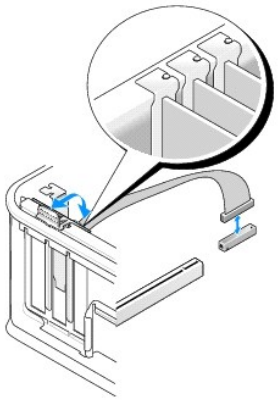
CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Installing a PS/2 Serial Port Adapter

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently lift the release tab on the card retention latch from the inside to pivot the latch open. Pivot the latch until it snaps into the open position.
4. Remove the filler bracket (if applicable).

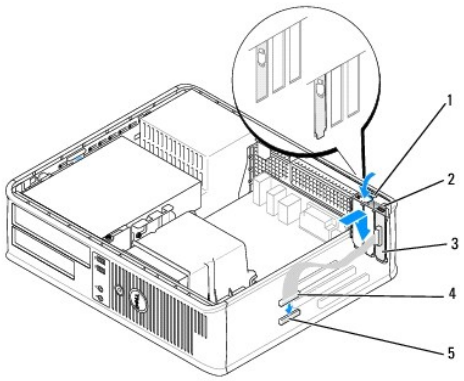
   NOTE: See the documentation that came with the adapter for information on configuring the adapter, making internal connections, or customizing it for your computer.

5. Align the PS/2 serial-port adapter bracket in the retention slot and press down firmly. Ensure that the adapter is fully seated in the slot.



6. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.
7. Secure the card(s) by closing the card retention latch and snapping it into place.

CAUTION: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.



1	release tab	2	adapter retention latch
3	PS/2 serial-port adapter bracket	4	serial port adapter connector
5	serial port adapter system board connector (SERIAL2)		

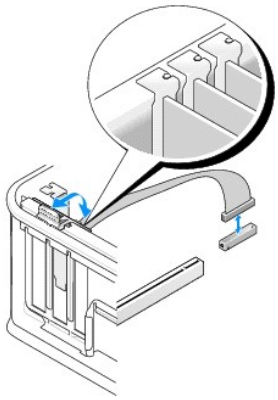
8. Connect the adapter cable to the PS/2 serial port adapter connector (SERIAL2) on the system board (see System Board Components).

   NOTE: See the documentation for the PS/2 serial port adapter for information about the cable connections.

9. Replace the computer cover (see Replacing the Computer Cover).

Removing a PS/2 Serial Port Adapter

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently lift the release tab on the card retention latch from the inside to pivot the latch open. Pivot the latch until it snaps into the open position.
4. Disconnect the PS/2 serial-port cable from the system board (see System Board Components).



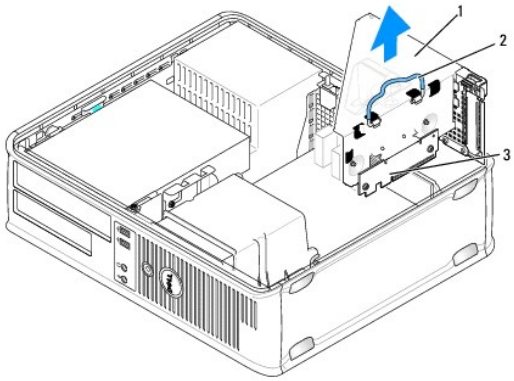
5. Ease the PS/2 serial-port adapter bracket out of its retention slot.
6. If you are removing the adapter permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

7. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.
8. Secure any remaining card(s) by closing the card retention latch and snapping it into place.
9. Replace the computer cover (see Replacing the Computer Cover).

Installing a PS/2 Serial Port Adapter in the Riser-Card Cage

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the riser-card cage:
   a. Check any cables connected to cards through the back panel openings. Disconnect any cables that will not reach the riser-card cage once they are removed from the computer.
   b. Rotate the riser-card cage handle up and gently pull on the handle to lift the riser-card cage up and away from the computer.



1	riser-card cage	2	handle
3	riser cards (2)		

4. Gently lift the release tab on the card retention latch from the inside to pivot the latch open. Pivot the latch until it snaps into the open position.
5. If you are installing a new PS/2 serial port adapter, remove the filler bracket to create an empty card-slot opening.
6. If you are replacing a PS/2 adapter that is already installed in the computer, remove the adapter.
7. If necessary, disconnect any cables connected to the adapter.

WARNING: To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards or adapters.

8. Align the PS/2 serial-port adapter bracket in the retention slot and press down firmly. Ensure that the adapter is fully seated in the slot.
9. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.
10. Secure the card(s) by closing the card retention latch and snapping it into place.

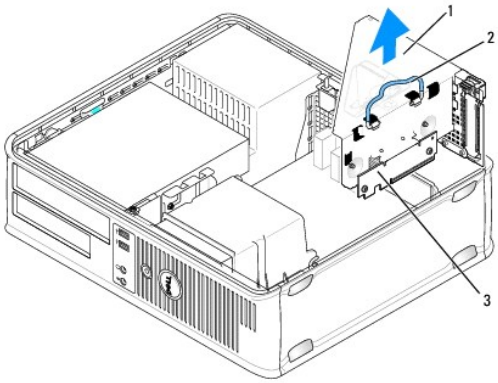
CAUTION: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

11. Connect the adapter cable to the PS/2 serial port adapter connector (PS2/SERIAL2) on the system board (see System Board Components).

12. Replace the riser-card cage:
    a. Align the tabs in the side of the riser-card cage with the slots on the side of the computer, and slide the riser-card cage down into place.
    b. Ensure that the riser-card connectors are fully seated in the connectors on the system board.
    c. Rotate the riser-card cage handle to the down position.
13. Connect any disconnected cables.
14. Replace the computer cover (see Replacing the Computer Cover).
15. Install any drivers required for the PS/2 serial port adapter.

Removing a PS/2 Serial Port Adapter From the Riser-Card Cage

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the riser-card cage:
    a. Check any cables connected to cards through the back panel openings. Disconnect any cables that will not reach the riser-card cage once they are removed from the computer.
    b. Rotate the riser-card cage handle up and gently pull on the handle and lift the riser-card cage up and away from the computer.



1	riser-card cage	2	handle
3	riser cards (2)		

4. Gently lift the release tab on the card retention latch from the inside to pivot the latch open. Pivot the latch until it snaps into the open position.
5. Disconnect the PS/2 serial-port cable from the system board (see System Board Components).
6. Grasp the PS/2 serial-port adapter bracket by its top corners, and ease it out of its connector.
7. If you are removing the adapter permanently, install a filler bracket in the empty card-slot opening.

    NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets also keep dust and dirt out of your computer.

8. Before you close the card retention mechanism, ensure that:
    - The tops of all cards and filler brackets are flush with the alignment bar.
    - The notch in the top of the card or filler bracket fits around the alignment guide.
9. Secure the card(s) by closing the card retention latch and snapping it into place.
10. Replace the riser-card cage:
    a. Align the tabs in the side of the riser-card cage with the slots on the side of the computer, and slide the riser-card cage down into place.
    b. Ensure that the riser-card connectors are fully seated in the connectors on the system board.

c. Rotate the riser-card cage handle to the down position.

11. Replace the computer cover (see Replacing the Computer Cover).

12. Uninstall the adapter's driver. See the documentation that came with the adapter for instructions.

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Dell™ OptiPlex™ 760 Service Manual

- Processor

Processor

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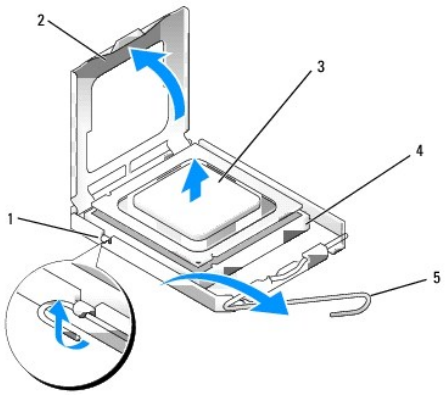
CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Removing the Processor

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the heat sink assembly (see Removing the Heat Sink Assembly).

CAUTION: Unless a new heat sink is required for the new processor, reuse the original heat sink assembly when you replace the processor.

4. Open the processor cover by sliding the release lever from under the center cover latch on the socket. Then pull the lever back to release the processor.



1	center cover latch	2	processor cover
3	processor	4	socket
5	release lever		

CAUTION: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

5. Gently remove the processor from the socket.

   Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

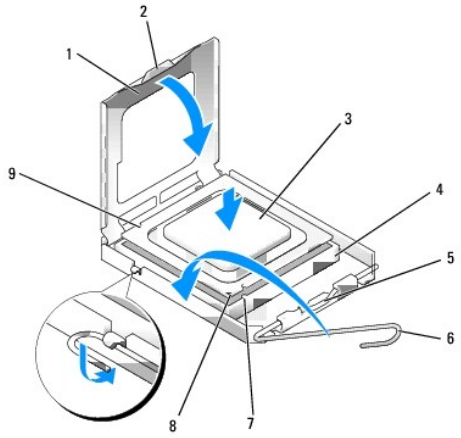
CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

CAUTION: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Unpack the new processor, being careful not to touch the underside of the processor.

CAUTION: You must position the processor correctly in the socket to avoid permanent damage to the processor and the computer when you turn on the computer.

4. If the release lever on the socket is not fully extended, move it to that position.
5. Orient the front and rear alignment-notches on the processor with the front and rear alignment-notches on the socket.
6. Align the pin-1 corners of the processor and socket.



1	processor cover	2	tab
3	processor	4	processor socket
5	center cover latch	6	release lever
7	front alignment-notch	8	socket and processor pin-1 indicator
9	rear alignment-notch		

CAUTION: To avoid damage, ensure that the processor aligns properly with the socket, and do not use excessive force when you install the processor.

7. Set the processor lightly in the socket and ensure that the processor is positioned correctly.
8. When the processor is fully seated in the socket, close the processor cover.

   Ensure that the tab on the processor cover is positioned underneath the center cover latch on the socket.
9. Pivot the socket release lever back toward the socket, and snap it into place to secure the processor.
10. Clean the thermal grease from the bottom of the heat sink.

CAUTION: Ensure that you apply new thermal grease. New thermal grease is critical for ensuring adequate thermal bonding, which is a requirement for optimal processor operation.

11. Apply the new thermal grease to the top of the processor.
12. Install the heat sink assembly (see Installing the Heat Sink Assembly).
13. Replace the computer cover (see Replacing the Computer Cover).

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Dell™ OptiPlex™ 760 Service Manual

- Chassis Intrusion Switch

Chassis Intrusion Switch

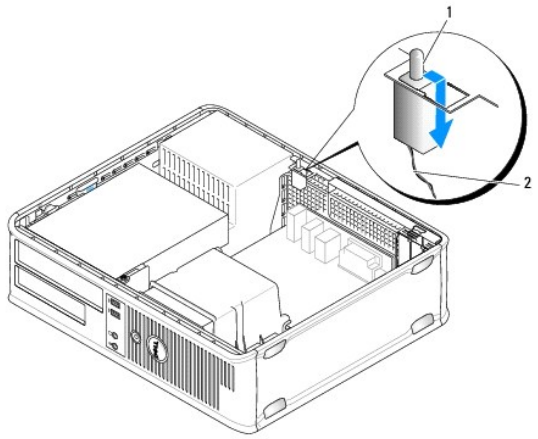
WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

NOTE: The chassis intrusion switch is standard on the ultra small form factor computer but is optional on mini tower, desktop, and small form factor computers; it may not be present on your computer.

Removing the Chassis Intrusion Switch

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Press the chassis intrusion switch cable connector release mechanism and pull the cable connector to disconnect the chassis intrusion switch cable from the system board.
4. Slide the chassis intrusion switch out of its slot in the metal bracket, and then push it down through the square hole in the bracket to remove the switch and its attached cable from the computer.

   NOTE: You may feel a slight resistance as you slide the switch out of the slot.



1	chassis intrusion switch	2	chassis intrusion switch cable

Replacing the Chassis Intrusion Switch

1. Gently insert the switch from underneath the metal bracket into the square hole in the bracket, and then slide the chassis intrusion switch into its slot until it snaps securely into place.
2. Reconnect the cable to the system board.
3. Replace the computer cover (see Replacing the Computer Cover).

Resetting the Chassis Intrusion Detector

1. Turn on (or restart) your computer.

2. When the DELL™ logo appears, press <F12> immediately.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then shut down your computer and try again.

3. Select **System Setup**.

4. Select **Security→Chassis Intrusion** and then select the **Clear Intrusion Warning** option to reset the chassis intrusion detector. Change the setting to **On**, **On-Silent**, or **Disabled**.

NOTE: The default setting is **On-Silent**.

5. Save your BIOS settings and exit system setup.

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Dell™ OptiPlex™ 760 Service Manual

- Drives

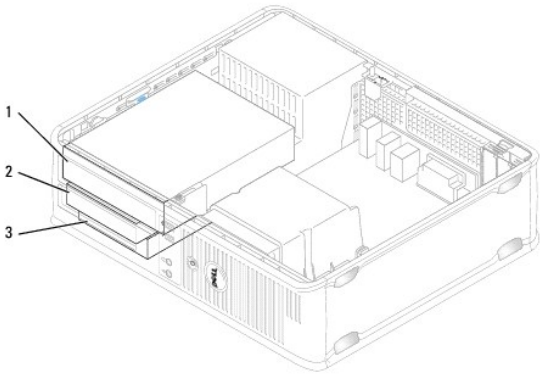
Drives

Your computer supports:

- One serial ATA (SATA) hard drive
- One 3.5-inch drive bay (to support a floppy drive or a media card reader)
- One SATA optical drive

NOTE: Due to the limited number of drive bays and controllers on this computer, you will not be able to connect all supported devices at once.

NOTE: If you will be operating your computer without an optical drive or a 3.5-inch device (floppy drive or media card reader) installed, the appropriate drive bay insert must be installed in place of the drive. Contact Dell if you need a drive bay insert.



1	optical drive	2	floppy drive
3	hard drive		

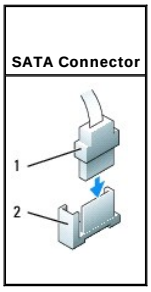
General Drive Installation Guidelines

SATA connectors on the system board are labeled SATA0 and SATA1. Hard drives must be connected to the lower-numbered SATA connectors. Any other SATA device (like an optical drive) must be connected to the remaining SATA connectors numbered higher than the one that the hard drive is connected to. For example, if you have a SATA hard drive and a SATA optical drive, connect the hard drive to the SATA0 connector and connect the SATA optical drive to the SATA1 connector (see System Board Components for the location of the SATA connectors on the system board).

Connecting Drive Cables

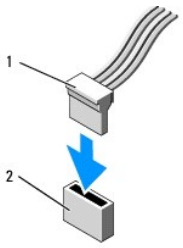
When you install a drive, you connect two cables—a DC power cable and a data interface cable—to the back of the drive.

Data Interface Connectors



1	data interface cable connector
2	data interface connector

Power Cable Connectors

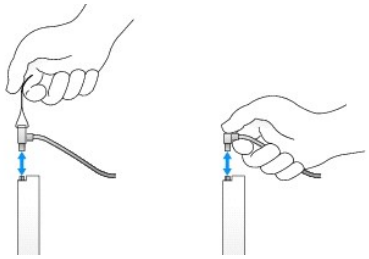


1	power cable	2	power input connector

Connecting and Disconnecting Drive Cables

When removing a cable with a pull-tab, grasp the colored pull-tab and pull until the connector detaches.

When connecting and disconnecting a cable without a pull tab, hold the cable by the black connector at each end.



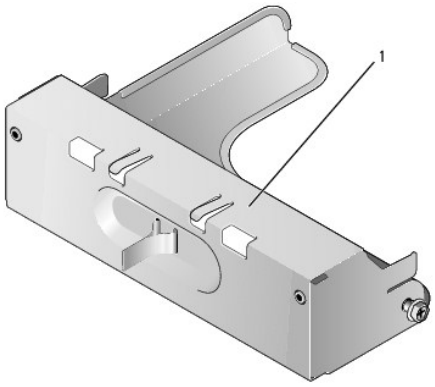
Drive Inserts

Your computer will come with a plastic insert with shoulder screws and a metal insert.

Removing Drive Inserts

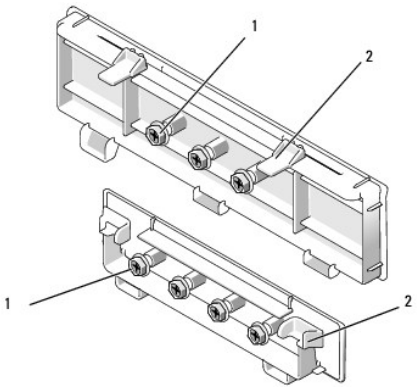
If you are installing a new drive:

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Lift the drive release latch.
4. Slide the metal bracket toward the back of the computer and lift up.



1	metal insert

5. Press the release tabs on the plastic insert and press from behind to remove.



1	shoulder screws	2	plastic drive insert

Replacing Drive Inserts

If you are removing a drive, and need to replace the inserts:

1. Place the plastic insert over the opening and press the insert tab down until the plastic insert snaps into place.
2. Slide the metal bracket toward the front of the computer and click into place.
3. Replace the computer cover (see Replacing the Computer Cover).

Optical Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

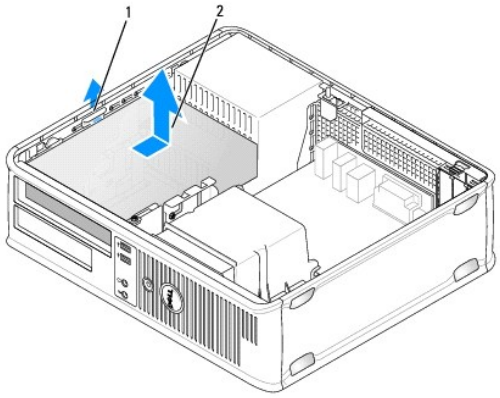
NOTE: If you will be operating your computer without an optical drive or a 3.5-inch device (floppy drive or media card reader) installed, the appropriate drive bay insert must be installed in place of the drive. Contact Dell if you need a drive bay insert. See Removing Drive Inserts.

Removing an Optical Drive

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

CAUTION: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

3. Pull up on the drive-release latch and slide the drive towards the back of the computer. Then, lift up to remove the drive from the computer.



1	drive release latch	2	optical drive

4. Disconnect the power and data cables from the back of the drive.

5. If you are not replacing the optical drive at this time, install the optical drive insert by lowering it into the drive bay until it clicks into place. Contact Dell if you need a drive bay insert.

Installing an Optical Drive

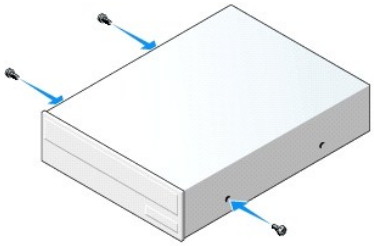
1. Unpack the drive and prepare it for installation.
   Check the documentation that accompanied the drive to verify that the drive is configured for your computer.

2. Follow the procedures in Working on Your Computer.

3. If you are *installing a new drive*, remove the drive inserts and then remove the three shoulder screws (see Removing Drive Inserts).

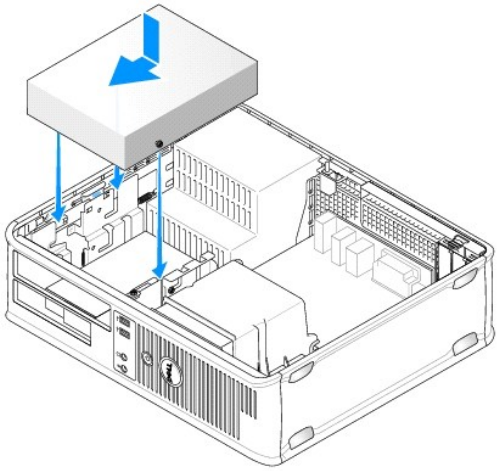
   If you are *replacing an existing drive*, follow procedures in Removing an Optical Drive and remove the three shoulder screws from the existing drive.

4. Insert the three shoulder screws into the sides of the new drive and tighten them.



5. Connect the power and data cables to the drive.

6. Align the shoulder screws with the screw guides, and slide the drive into the bay until it clicks into place.



7. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
8. Replace the computer cover (see Replacing the Computer Cover).
9. Enter system setup and select the appropriate **Drive** option to enable the drive (see "Entering System Setup" on page 79).
10. Verify that your computer works correctly by running the Dell Diagnostics (see Dell Diagnostics).

Floppy Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

NOTE: If you will be operating your computer without an optical drive or a 3.5-inch device (floppy drive) installed, the appropriate drive bay insert must be installed in place of the drive. Contact Dell if you need a drive bay insert.

Removing a Floppy Drive

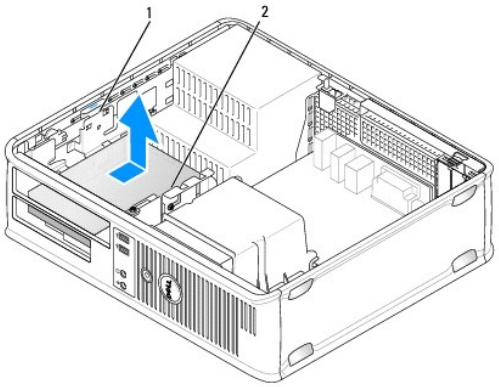
1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

   NOTE: Since the following steps do not require the complete removal of the optical drive, it is not necessary to disconnect the cables connecting the optical drive.

3. Remove the optical drive (if one exists) and carefully set it aside (see Removing an Optical Drive).

CAUTION: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

4. Pull up on the drive-release latch and slide the floppy drive the back of the computer. Then, lift up to remove the drive from the computer.



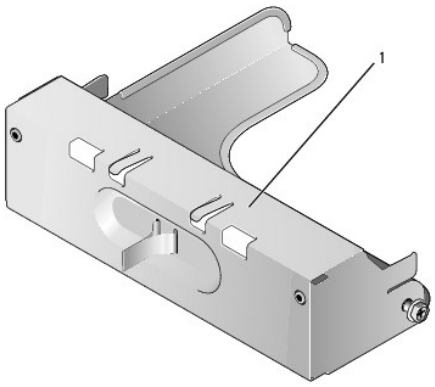
1	drive release latch	2	floppy drive

5. Disconnect the power and data cables from the back of the floppy drive.

6. If you are not replacing the floppy drive or media card reader at this time, install the floppy drive inserts (see Replacing Drive Inserts). Contact Dell if you need a drive bay insert.

Installing a Floppy Drive

1. If you are installing a new floppy drive
   a. Remove the drive inserts (see Removing Drive Inserts).
   b. Pull to remove the floppy drive insert that should be installed in the drive bay.
   c. Remove the four shoulder screws from the drive panel insert.

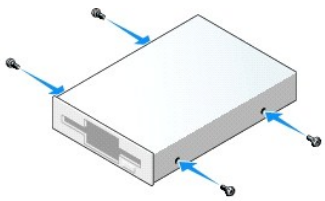


1	drive insert

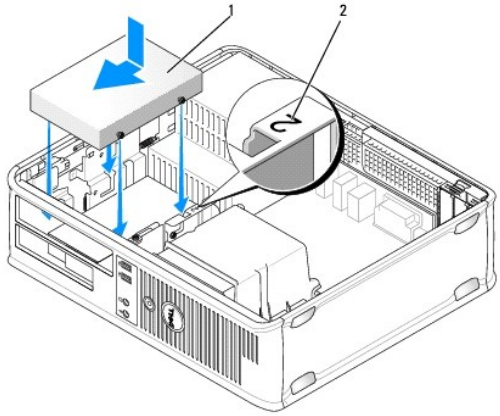
2. If you are replacing an existing floppy drive:

   Remove the four shoulder screws from the existing drive or media card reader.

3. Insert the four shoulder screws into the sides of the new floppy drive and tighten them.



4. Attach the power and data cables to the floppy drive.
5. Align the shoulder screws with the screw guides, and slide the drive into the bay until it clicks into place.



1	power cable	2	slot verification number

6. Replace the optical drive (see Optical Drive).
7. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
8. Replace the computer cover (see Replacing the Computer Cover).
9. Enter system setup and set the **Diskette Drive** option to enable your new floppy drive (see System Setup).
10. Verify that your computer works correctly by running the Dell Diagnostics (see Dell Diagnostics).

Media Card Reader

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

NOTE: If you will be operating your computer without an optical drive or a 3.5-inch drive installed, the appropriate drive bay insert must be installed in place of the drive. Contact Dell if you need a drive bay insert.

Removing a Media Card Reader

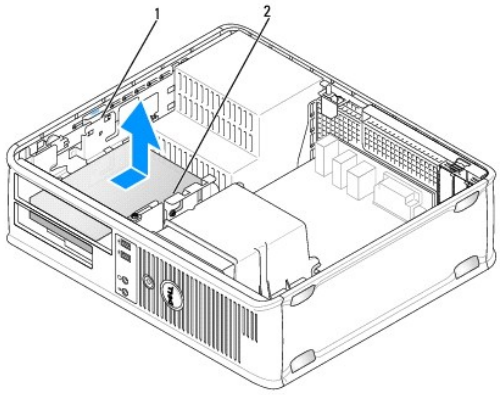
1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

   NOTE: Since the following steps do not require the complete removal of the optical drive, it is not necessary to disconnect the cables connecting the optical drive.

3. Remove the optical drive (if one exists) and carefully set it aside (see Removing an Optical Drive).

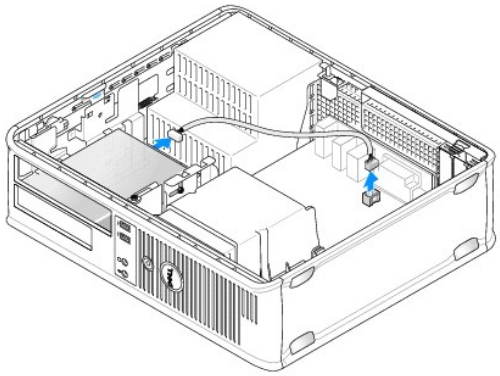
CAUTION: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

4. Pull up on the drive-release latch and slide the media card reader to the back of the computer. Then, lift up to remove the drive from the computer.



1	drive release latch	2	media card reader

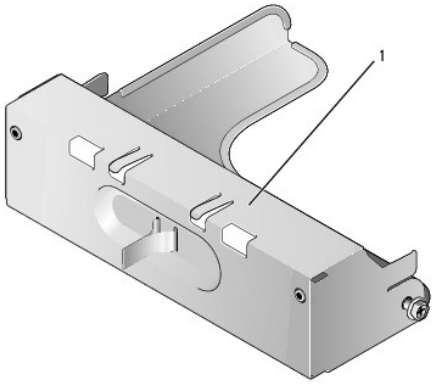
5. Disconnect the cable from the back of the media card reader and from the system board.



6. If you are not replacing the media card reader at this time, install the 3.5 inch drive insert (see Replacing Drive Inserts). Contact Dell if you need a drive bay insert.

Installing a Media Card Reader

1. If you are installing a new drive or media card reader:
   a. Remove the drive inserts (see Removing Drive Inserts).
   b. Remove the four shoulder screws from the drive panel insert.
   c. Pull to remove the 3.5 inch drive insert that should be installed in the drive bay.

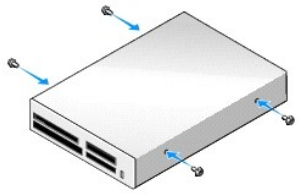


1	drive insert

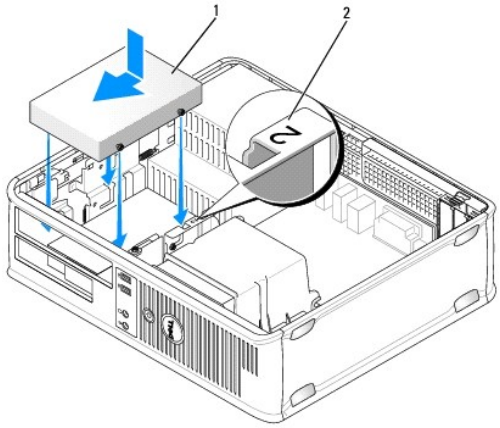
2. If you are replacing an existing media card reader:

   Remove the four shoulder screws from the existing media card reader.

3. Insert the four shoulder screws into the sides of the new media card reader and tighten them.

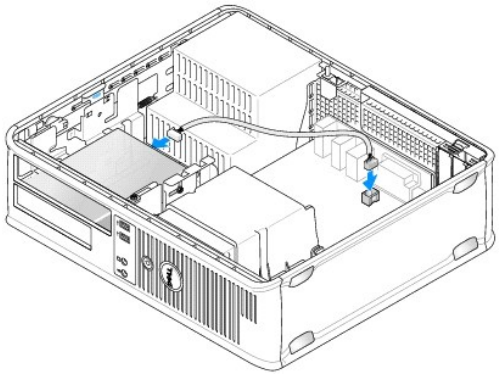


4. Align the shoulder screws with the screw guides, and slide the media card reader into the bay until it clicks into place.



1	media card reader	2	slot verification number

5. Connect the cable to the media card reader and system board connector.



6. Replace the optical drive (see Optical Drive).

7. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.

8. Replace the computer cover (see Replacing the Computer Cover).

9. Verify that your computer works correctly by running the Dell Diagnostics (see Dell Diagnostics).

Hard Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

CAUTION: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

Removing a Hard Drive

CAUTION: If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.

1. Check the documentation for the drive to verify that it is configured for your computer.

2. Follow the procedures in Working on Your Computer.

3. Remove the computer cover (see Removing the Computer Cover).

NOTE: Since the following steps do not require the complete removal of the optical drive and the floppy drive, it is not necessary to disconnect the cables connecting the two drives.

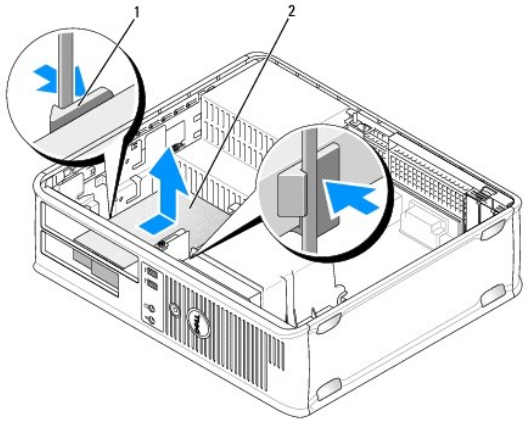
4. Remove the optical drive from the bay and carefully set it aside (see Optical Drive).

5. Remove the floppy drive from the 3.5-inch bay and carefully set it aside (see Floppy Drive).

6. Press in on the two plastic securing clips on each side of the drive and slide the drive towards the back of the computer.

CAUTION: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

7. Lift the drive out of the computer and disconnect the power and data cables from the drive.



1	securing clips (2)	2	hard drive

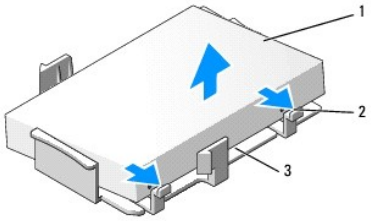
Installing a Hard Drive

1. Check the documentation for the drive to verify that it is configured for your computer.

CAUTION: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

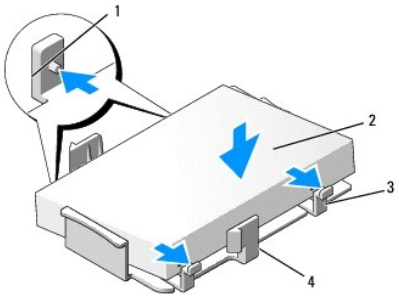
2. Unpack the replacement hard drive, and prepare it for installation.

3. If your replacement hard drive does not have the plastic hard-drive bracket attached, remove the bracket from the existing drive by unsnapping it from the drive.



1	hard drive	2	release tabs (2)
3	plastic hard drive bracket		

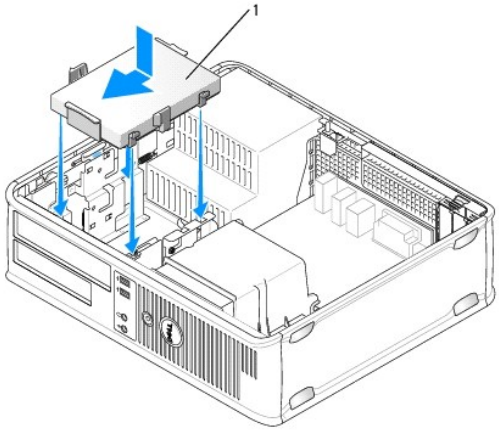
4. Attach the bracket to the new drive by snapping it onto the drive.



1	securing tabs (2)	2	drive
3	screws (4)	4	plastic hard drive bracket

5. Connect the power and data cables to the drive.

6. Locate the correct slot for the drive, and slide the drive into the bay until it clicks into place.



1	hard drive

7. Replace the floppy drive and optical drive.

8. Check all connectors to be certain that they are properly cabled and firmly seated.
9. Replace the computer cover (see Replacing the Computer Cover).
10. If the drive you just installed is the primary drive, insert a bootable medium into your boot drive.
11. Turn on the computer.
12. Enter system setup, and update the SATA port option under the Drives option list (see Entering System Setup).
13. Exit system setup, and reboot the computer.
14. Partition and logically format your drive.

    NOTE: For instructions, see the documentation that came with your operating system.

15. Test the hard drive by running the Dell Diagnostics (see Dell Diagnostics).
16. Install your operating system on the hard drive.

    NOTE: For instructions, see the documentation that came with your operating system.

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Dell™ OptiPlex™ 760 Service Manual

- System Fan

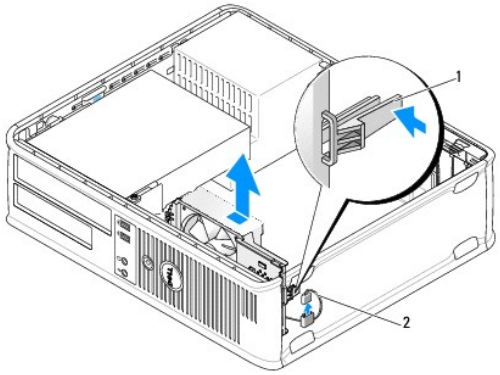
System Fan

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Removing the System Fan

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the heat sink assembly (see Removing the Processor).
4. Disconnect the system fan power cable from the system board.



1	retention tab	2	system fan power cable

5. Pull the retention tab at the base of the fan assembly.
6. Slide the system fan towards the back of the computer and lift it to remove the system fan assembly from the computer.

Installing the System Fan

1. To install the system fan follow the removal procedure in the reverse order.
2. Close the computer cover (see Replacing the Computer Cover).

Dell™ OptiPlex™ 760 Service Manual

- Heat Sink Assembly

Heat Sink Assembly

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

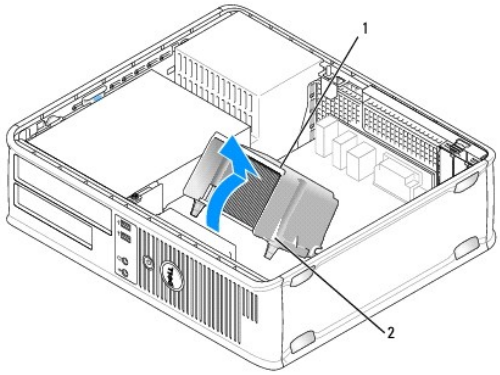
WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing the Heat Sink Assembly

1. Loosen the captive screws on each side of the heat sink assembly.

WARNING: Despite having a plastic shield, the heat sink assembly may be very hot during normal operation. Be sure that it has had sufficient time to cool before you touch it.

2. Rotate the heat sink assembly upward, and remove the assembly from the computer.
   Lay the heat sink down on its top.

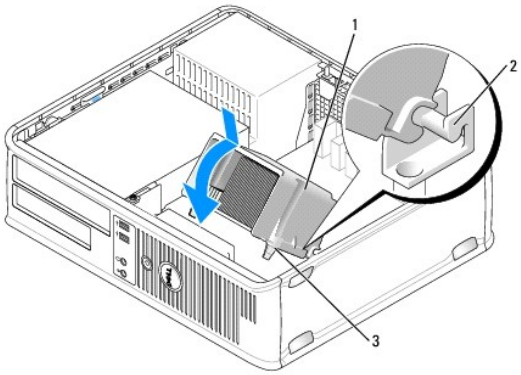


1	heat sink assembly	2	captive screw housing (2)

Installing the Heat Sink Assembly

1. Place the heat sink assembly back onto the heat-sink assembly bracket.
2. Rotate the heat sink assembly down towards the computer base and tighten the two captive screws.

CAUTION: Ensure that the heat sink assembly is correctly seated and secure.



1	heat sink assembly	2	heat-sink assembly bracket
3	captive screw housing (2)		

3. Replace the computer cover (see Replacing the Computer Cover).

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- I/O Panel

I/O Panel

Removing the I/O Panel

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

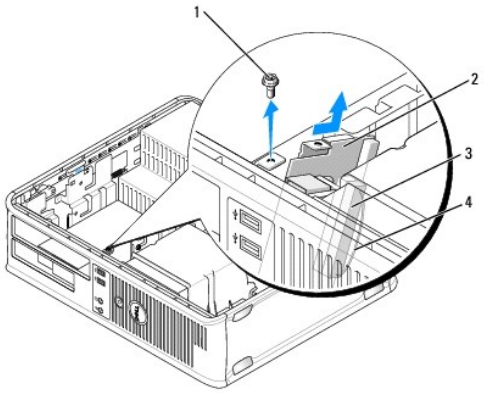
WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

NOTE: Note the routing of all cables before disconnecting them, so that you can re route them correctly when installing the new I/O panel.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the screw that secures the I/O panel to the desktop computer.

CAUTION: When sliding the I/O panel out of the computer, be extremely careful. Carelessness may result in damage to the cable connectors and the cable routing clips.

4. Gently rotate and slide the I/O panel away from the computer.



1	securing screw	2	I/O panel
3	I/O cable connector	4	I/O connector pull loop

5. Remove the cable from the I/O panel by pulling on the pull tab.

Replacing the I/O Panel

To replace the I/O panel, follow the removal procedures in the reverse order.

NOTE: Use the guides on the I/O panel bracket to help position the I/O panel in place and use the notch on the I/O panel bracket to help seat the card.

Dell™ OptiPlex™ 760 Service Manual

- Power Supply

Power Supply

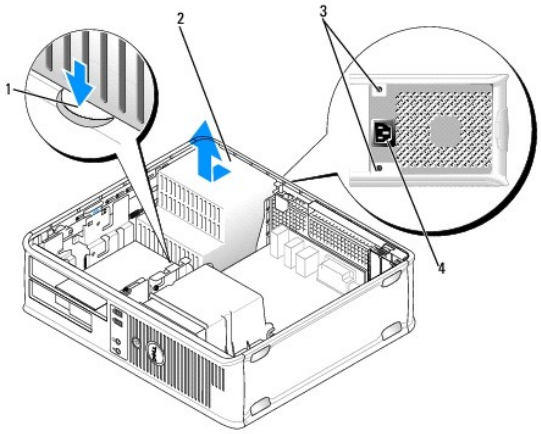
Replacing the Power Supply

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Disconnect the DC power cables from the system board and the drives.

   Note the routing of the DC power cables underneath the tabs in the computer chassis as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent them from being pinched or crimped.
4. Remove the two screws that attach the power supply to the back of the computer chassis.
5. Remove the optical drive and carefully set it aside (see Optical Drive).
6. Press the release button located on the floor of the computer chassis and then slide the power supply towards the front of the computer chassis.



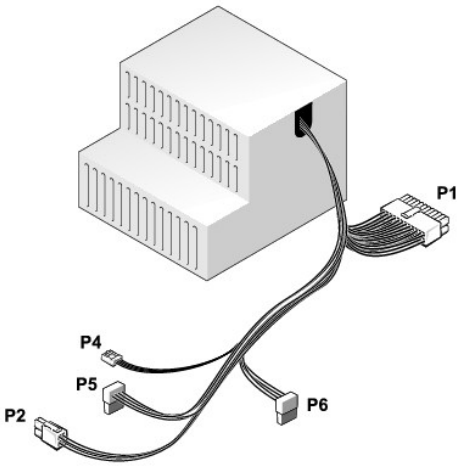
1	release button	2	power supply
3	screws (2)	4	AC power connector

7. Lift the power supply up and out of the computer.
8. Slide the replacement power supply into place.
9. Replace the screws that secure the power supply to the back of the computer chassis.
10. Reconnect the DC power cables.
11. Replace the optical drive (see Optical Drive).

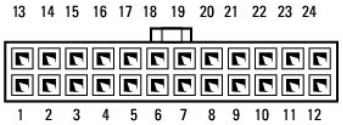
12. Connect the AC power cable to the connector.

13. Replace the computer cover (see Replacing the Computer Cover).

DC Power Connectors



DC Power Connector P1



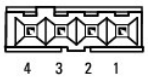
Pin Number	Signal name	18-AWG Wire
1	COM	Black
2	FAN	Brown
3	N/C	N/C
4	+3.3 VDC	Orange
5	COM	Black
6	COM	Black
7	+12 VDC	Yellow
8	+5 VSB	Purple
9	COM	Black
10	+5 VDC	Red
11	+5 VDC	Red
12	+5 VDC	Red
13	COM	Black
14	COM	Black
15	+3.3 VDC	Orange
16	+3.3 VDC	Orange
17	POK	Gray
18	COM	Black
19	+12 VDC	Yellow
20	-12 VDC	Blue
21	COM	Black
22	PS_ON	Green
23	+5 VDC	Red

24	+5 VDC	Red

DC Power Connector P2

Pin Number	Signal Name	18-AWG Wire
1	GND	Black
2	GND	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

DC Power Connector P4



Pin Number	Signal Name	22-AWG Wire
1	+5 VDC	Red
2	GND	Black
3	GND	Black
4	+12 VDC	Yellow

DC Power Connector P5 and P6

Pin Number	Signal name	18-AWG Wire
1	+3.3 VDC	Orange
2	GND	Black
3	+5 VDC	Red
4	GND	Black
5	+12 VDC	Yellow

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Dell™ OptiPlex™ 760 Service Manual

- Speakers

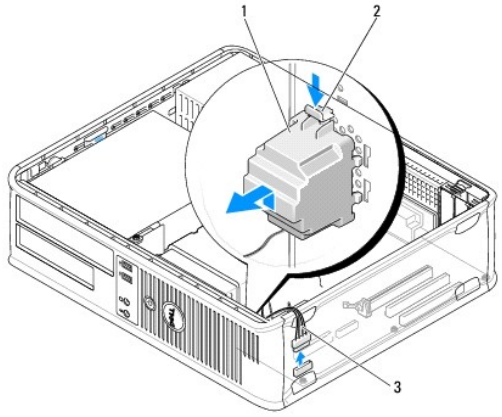
Speakers

Removing a Speaker

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.
2. Remove the cover of your computer (see Removing the Computer Cover).
3. Disconnect the speaker cable from the INT_SPKR connector on the system board.
4. Press the release tab and then slide the speaker down and away from the computer chassis.



1	speaker	2	release tab
3	speaker cable		

5. Replace the computer cover.
6. Turn on power to the computer.

Installing a Speaker

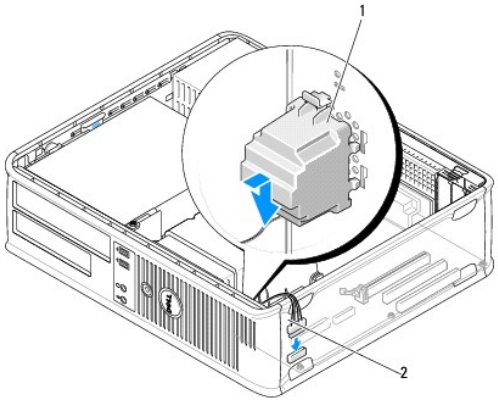
WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.

2. Remove the cover of your computer (see Removing the Computer Cover).

3. Insert the speaker into the chassis of the computer.



1	speaker	2	speaker cable

4. Connect the speaker cable to the system board.

5. Replace the computer cover.

6. Turn on power to the computer.

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Desktop

Dell™ OptiPlex™ 760 Service Manual

- Removing the Computer Cover
- Inside View of Your Computer
- System Board Components

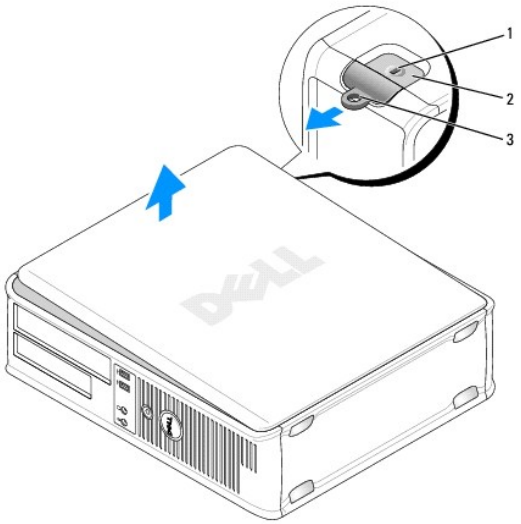
Removing the Computer Cover

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

1. Follow the procedures in Working on Your Computer.
2. If you have installed a padlock through the padlock ring on the back panel, remove the padlock.
3. Locate the cover release latch shown in the illustration. Then, slide the release latch back as you lift the cover.
4. Grip the sides of the computer cover and pivot the cover up using the hinge tabs as leverage points.
5. Remove the cover from the hinge tabs and set it aside on a soft nonabrasive surface.

WARNING: Graphics card heat sinks can become very hot during normal operation. Ensure that a graphics card heat sink has had sufficient time to cool before you touch it.



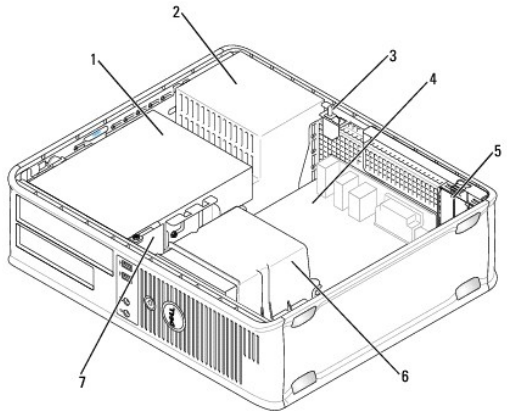
1	security cable slot	2	cover release latch
3	padlock ring		

Inside View of Your Computer

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

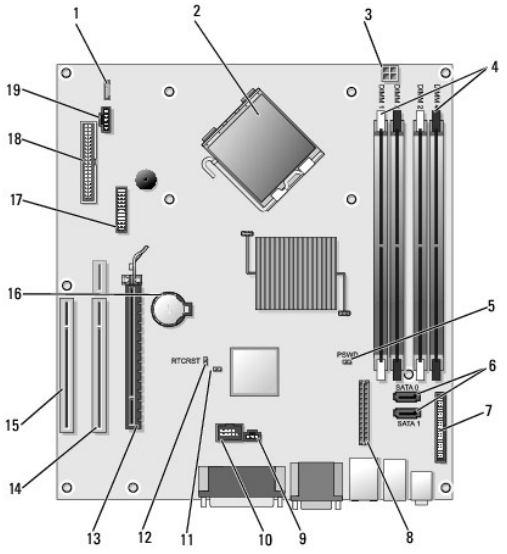
WARNING: To avoid electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

CAUTION: **Be careful when opening the computer cover to ensure that you do not accidentally disconnect cables from the system board.**



1	drive bays (media card reader or floppy drive, optical drive, and hard drive)	2	power supply
3	optional chassis-intrusion switch	4	system board
5	card slots	6	heat sink assembly
7	front I/O panel		

System Board Components



1	internal speaker (INT_SPKR)	2	processor connector (CPU)
3	processor power connector (12VPOWER)	4	memory module connectors (DIMM_1, DIMM_2, DIMM_3, and DIMM_4)
5	password jumper (PSWD)	6	SATA connectors (SATA1 and SATA0)
7	front-panel connector (FRONTPANEL)	8	power connector (MICRO_PWR)
9	intrusion switch connector (INTRUDER)	10	internal USB (INT_USB)
11	service mode disable jumper	12	RTC reset jumper (RTCRST)
13	PCI Express x16 connector (SLOT1)	14	riser connector (uses PCI-E port/SLOT1 and PCI port/SLOT2)
15	PCI connector (SLOT3)	16	battery socket (BATTERY)

17	PS/2 or serial connector (SERIAL2)	18	floppy connector (DSKT)
19	fan connector (FAN_CPU)		

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Contacting Dell

Dell™ OptiPlex™ 760 Service Manual

To contact Dell for sales, technical support, or customer service issues:

1. Visit **support.dell.com**.
2. Verify your country or region in the **Choose a Country / Region** drop-down menu at the bottom of the page.
3. Click **Contact Us** on the left side of the page.
4. Select the appropriate service or support link based on your need.
5. Choose the method of contacting Dell that is convenient for you.

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Glossary

Dell™ OptiPlex™ 760 Service Manual

Terms in this Glossary are provided for informational purposes only and may or may not describe features included with your particular computer.

A

AC — alternating current — The form of electricity that powers your computer when you plug the AC adapter power cable in to an electrical outlet.

ACPI — advanced configuration and power interface — A power management specification that enables Microsoft® Windows® operating systems to put a computer in standby or hibernate mode to conserve the amount of electrical power allocated to each device attached to the computer.

AGP — accelerated graphics port — A dedicated graphics port that allows system memory to be used for video-related tasks. AGP delivers a smooth, true-color video image because of the faster interface between the video circuitry and the computer memory.

AHCI — Advanced Host Controller Interface — An interface for a SATA hard drive Host Controller which allows the storage driver to enable technologies such as Native Command Queuing (NCQ) and hot plug.

ALS — ambient light sensor — A feature that helps to control display brightness.

antivirus software — A program designed to identify, quarantine, and/or delete viruses from your computer.

ASF — alert standards format — A standard to define a mechanism for reporting hardware and software alerts to a management console. ASF is designed to be platform- and operating system-independent.

B

battery life span — The length of time (years) during which a portable computer battery is able to be depleted and recharged.

battery operating time — The length of time (minutes or hours) that a portable computer battery powers the computer.

BIOS — basic input/output system — A program (or utility) that serves as an interface between the computer hardware and the operating system. Unless you understand what effect these settings have on the computer, do not change them. Also referred to as *system setup*.

bit — The smallest unit of data interpreted by your computer.

Bluetooth® wireless technology — A wireless technology standard for short-range (9 m [29 feet]) networking devices that allows for enabled devices to automatically recognize each other.

boot sequence — Specifies the order of the devices from which the computer attempts to boot.

bootable CD — A CD that you can use to start your computer. In case your hard drive is damaged or your computer has a virus, ensure that you always have a bootable CD or floppy disk available. Your *Drivers and Utilities* media (or *ResourceCD*) is a bootable CD or DVD.

bootable disk — A disk that you can use to start your computer. In case your hard drive is damaged or your computer has a virus, ensure that you always have a bootable CD, DVD, or floppy disk available.

bps — bits per second — The standard unit for measuring data transmission speed.

BTU — British thermal unit — A measurement of heat output.

bus — A communication pathway between the components in your computer.

bus speed — The speed, given in MHz, that indicates how fast a bus can transfer information.

byte — The basic data unit used by your computer. A byte is usually equal to 8 bits.

C

C — Celsius — A temperature measurement scale where 0° is the freezing point and 100° is the boiling point of water.

cache — A special high-speed storage mechanism which can be either a reserved section of main memory or an independent high-speed storage device. The cache enhances the efficiency of many processor operations.

L1 cache — Primary cache stored inside the processor.

L2 cache — Secondary cache which can either be external to the processor or incorporated into the processor architecture.

carnet — An international customs document that facilitates temporary imports into foreign countries. Also known as a *merchandise passport*.

CD-R — CD recordable — A recordable version of a CD. Data can be recorded only once onto a CD-R. Once recorded, the data cannot be erased or written over.

CD-RW — CD rewritable — A rewritable version of a CD. Data can be written to a CD-RW disc, and then erased and written over (rewritten).

CD-RW drive — A drive that can read CDs and write to CD-RW (rewritable CDs) and CD-R (recordable CDs) discs. You can write to CD-RW discs multiple times, but you can write to CD-R discs only once.

CD-RW/DVD drive — A drive, sometimes referred to as a combo drive, that can read CDs and DVDs and write to CD-RW (rewritable CDs) and CD-R (recordable CDs) discs. You can write to CD-RW discs multiple times, but you can write to CD-R discs only once.

clock speed — The speed, given in MHz, that indicates how fast computer components that are connected to the system bus operate.

COA — Certificate of Authenticity — The Windows alpha-numeric code located on a sticker on your computer. Also referred to as the *Product Key* or *Product ID*.

Control Panel — A Windows utility that allows you to modify operating system and hardware settings, such as display settings.

controller — A chip that controls the transfer of data between the processor and memory or between the processor and devices.

CRIMM — continuity rambus in-line memory module — A special module that has no memory chips and is used to fill unused RIMM slots.

cursor — The marker on a display or screen that shows where the next keyboard, touch pad, or mouse action will occur. It often is a blinking solid line, an underline character, or a small arrow.

D

DCM — Dell Client Manager. Dell's utility for remote management

DDR SDRAM — double-data-rate SDRAM — A type of SDRAM that doubles the data burst cycle, improving system performance.

DDR2 SDRAM — double-data-rate 2 SDRAM — A type of DDR SDRAM that uses a 4-bit prefetch and other architectural changes to boost memory speed to over 400 MHz.

device — Hardware such as a disk drive, printer, or keyboard that is installed in or connected to your computer.

device driver — See *driver*.

DIMM — dual in-line memory module — A circuit board with memory chips that connects to a memory module on the system board.

DIN connector — A round, six-pin connector that conforms to DIN (Deutsche Industrie-Norm) standards; it is typically used to connect PS/2 keyboard or mouse cable connectors.

disk striping — A technique for spreading data over multiple disk drives. Disk striping can speed up operations that retrieve data from disk storage. Computers that use disk striping generally allow the user to select the data unit size or stripe width.

DMA — direct memory access — A channel that allows certain types of data transfer between RAM and a device to bypass the processor.

docking device — See *APR*.

DMTF — Distributed Management Task Force — A consortium of hardware and software companies who develop management standards for distributed desktop, network, enterprise, and Internet environments.

domain — A group of computers, programs, and devices on a network that are administered as a unit with common rules and procedures for use by a specific group of users. A user logs on to the domain to gain access to the resources.

DRAM — dynamic random-access memory — Memory that stores information in integrated circuits containing capacitors.

driver — Software that allows the operating system to control a device such as a printer. Many devices do not work properly if the correct driver is not installed in the computer.

DSL — Digital Subscriber Line — A technology that provides a constant, high-speed Internet connection through an analog telephone line.

dual-core — An Intel® technology in which two physical computational units exist inside a single processor package, thereby increasing computing efficiency and multi-tasking ability.

dual display mode — A display setting that allows you to use a second monitor as an extension of your display. Also referred to as *extended display mode*.

DVD+R — DVD recordable — A recordable version of a DVD. Data can be recorded only once onto a DVD+R. Once recorded, the data cannot be erased or written over. DVD+R technology is different from DVD-R technology.

DVD-R — DVD recordable — A recordable version of a DVD. Data can be recorded only once onto a DVD-R. Once recorded, the data cannot be erased or written over. DVD-R technology is different from DVD+R technology.

DVD+RW — DVD rewritable — A rewritable version of a DVD. Data can be written to a DVD+RW disc, and then erased and written over (rewritten). DVD+RW technology is different from DVD-RW technology.

DVD-RW — DVD rewritable — A rewritable version of a DVD. Data can be written to a DVD-RW disc, and then erased and written over (rewritten). DVD-RW technology is different from DVD+RW technology)

DVD+/-RW drive — drive that can read DVDs and most CD media and write to DVD+/-RW (rewritable DVDs) media.

DVI — digital video interface — A standard for digital transmission between a computer and a digital video display.

E

ECC — error checking and correction — A type of memory that includes special circuitry for testing the accuracy of data as it passes in and out of memory.

ECP — extended capabilities port — A parallel connector design that provides improved bidirectional data transmission. Similar to EPP, ECP uses direct memory access to transfer data and often improves performance.

EIDE — enhanced integrated device electronics — An improved version of the IDE interface for hard drives and CD drives.

EMI — electromagnetic interference — Electrical interference caused by electromagnetic radiation.

ENERGY STAR® — Environmental Protection Agency requirements that decrease the overall consumption of electricity.

EPP — enhanced parallel port — A parallel connector design that provides bidirectional data transmission.

ESD — electrostatic discharge — A rapid discharge of static electricity. ESD can damage integrated circuits found in computer and communications equipment.

expansion card — A circuit board that installs in an expansion slot on the system board in some computers, expanding the capabilities of the computer. Examples include video, modem, and sound cards.

expansion slot — A connector on the system board (in some computers) where you insert an expansion card, connecting it to the system bus.

ExpressCard — A removable I/O card adhering to the PCMCIA standard. Modems and network adapters are common types of ExpressCards. ExpressCards support both the PCI Express and USB 2.0 standard.

Express Service Code — A numeric code located on a sticker on your Dell™ computer. Use the Express Service Code when contacting Dell for assistance. Express Service Code service may not be available in some countries.

extended display mode — A display setting that allows you to use a second monitor as an extension of your display. Also referred to as *dual display mode*.

extended PC Card — A PC Card that extends beyond the edge of the PC Card slot when installed.

F

Fahrenheit — A temperature measurement scale where 32° is the freezing point and 212° is the boiling point of water.

FBD — fully-buffered DIMM — A DIMM with DDR2 DRAM chips and an Advanced Memory Buffer (AMB) that speeds communication between the DDR2 SDRAM chips and the system.

FCC — Federal Communications Commission — A U.S. agency responsible for enforcing communications-related regulations that state how much radiation computers and other electronic equipment can emit.

fingerprint reader — A strip sensor that uses your unique fingerprint to authenticate your user identity to help secure your computer.

folder — A term used to describe space on a disk or drive where files are organized and grouped. Files in a folder can be viewed and ordered in various ways, such as alphabetically, by date, and by size.

format — The process that prepares a drive or disk for file storage. When a drive or disk is formatted, the existing information on it is lost.

FSB — front side bus — The data path and physical interface between the processor and RAM.

FTP — file transfer protocol — A standard Internet protocol used to exchange files between computers connected to the Internet.

G

G — gravity — A measurement of weight and force.

GB — gigabyte — A measurement of data storage that equals 1024 MB (1,073,741,824 bytes). When used to refer to hard drive storage, the term is often rounded to 1,000,000,000 bytes.

GHz — gigahertz — A measurement of frequency that equals one thousand million Hz, or one thousand MHz. The speeds for computer processors, buses, and interfaces are often measured in GHz.

graphics mode — A video mode that can be defined as *x* horizontal pixels by *y* vertical pixels by *z* colors. Graphics modes can display an unlimited variety of shapes and fonts.

GUI — graphical user interface — Software that interacts with the user by means of menus, windows, and icons. Most programs that operate on the Windows operating systems are GUIs.

H

hard drive — A drive that reads and writes data on a hard disk. The terms hard drive and hard disk are often used interchangeably.

heat sink — A metal plate on some processors that helps dissipate heat.

hibernate mode — A power management mode that saves everything in memory to a reserved space on the hard drive and then turns off the computer. When you restart the computer, the memory information that was saved to the hard drive is automatically restored.

HTTP — hypertext transfer protocol — A protocol for exchanging files between computers connected to the Internet.

Hyperthreading — hyperthreading is an Intel technology that can enhance overall computer performance by allowing one physical processor to function as two logical processors, capable of performing certain tasks simultaneously.

Hz — hertz — A unit of frequency measurement that equals 1 cycle per second. Computers and electronic devices are often measured in kilohertz (kHz), megahertz (MHz), gigahertz (GHz), or terahertz (THz).

I

iAMT - Intel® Active Management Technology (Intel® AMT) Using built-in platform capabilities and popular third-party management and security applications, Intel AMT allows IT to better detect, repair, and protect their networked computing assets.

IC — integrated circuit — A semiconductor wafer, or chip, on which thousands or millions of tiny electronic components are fabricated for use in computer, audio, and video equipment.

IDE — integrated device electronics — An interface for mass storage devices in which the controller is integrated into the hard drive or CD drive.

IEEE 1394 — Institute of Electrical and Electronics Engineers, Inc. — A high-performance serial bus used to connect IEEE 1394-compatible devices, such as digital cameras and DVD players, to the computer.

infrared sensor — A port that allows you to transfer data between the computer and infrared-compatible devices without using a cable connection.

integrated — Usually refers to components that are physically located on the computer's system board. Also referred to as *built-in*.

I/O — input/output — An operation or device that enters and extracts data from your computer. Keyboards and printers are I/O devices.

I/O address — An address in RAM that is associated with a specific device (such as a serial connector, parallel connector, or expansion slot) and allows the processor to communicate with that device.

IrDA — Infrared Data Association — The organization that creates international standards for infrared communications.

IRQ — interrupt request — An electronic pathway assigned to a specific device so that the device can communicate with the processor. Each device connection must be assigned an IRQ. Although two devices can share the same IRQ assignment, you cannot operate both devices simultaneously.

ISP — Internet service provider — A company that allows you to access its host server to connect directly to the Internet, send and receive e-mail, and access websites. The ISP typically provides you with a software package, user name, and access phone numbers for a fee.

K

Kb — kilobit — A unit of data that equals 1024 bits. A measurement of the capacity of memory integrated circuits.

KB — kilobyte — A unit of data that equals 1024 bytes but is often referred to as 1000 bytes.

key combination — A command requiring you to press multiple keys at the same time.

kHz — kilohertz — A measurement of frequency that equals 1000 Hz.

L

LAN — local area network — A computer network covering a small area. A LAN usually is confined to a building or a few nearby buildings. A LAN can be connected to another LAN over any distance through telephone lines and radio waves to form a wide area network (WAN).

LCD — liquid crystal display — The technology used by portable computer and flat-panel displays.

LED — light-emitting diode — An electronic component that emits light to indicate the status of the computer.

local bus — A data bus that provides a fast throughput for devices to the processor.

LPT — line print terminal — The designation for a parallel connection to a printer or other parallel device.

M

Mb — megabit — A measurement of memory chip capacity that equals 1024 Kb.

Mbps — megabits per second — One million bits per second. This measurement is typically used for transmission speeds for networks and modems.

MB — megabyte — A measurement of data storage that equals 1,048,576 bytes. 1 MB equals 1024 KB. When used to refer to hard drive storage, the term is often rounded to 1,000,000 bytes.

MB/sec — megabytes per second — One million bytes per second. This measurement is typically used for data transfer ratings.

media bay — A bay that supports devices such as optical drives, a second battery, or a Dell TravelLite™ module.

memory — A temporary data storage area inside your computer. Because the data in memory is not permanent, it is recommended that you frequently save your files while you are working on them, and always save your files before you shut down the computer. Your computer can contain several different forms of memory, such as RAM, ROM, and video memory. Frequently, the word memory is used as a synonym for RAM.

memory address — A specific location where data is temporarily stored in RAM.

memory mapping — The process by which the computer assigns memory addresses to physical locations at start-up. Devices and software can then identify information that the processor can access.

memory module — A small circuit board containing memory chips, which connects to the system board.

MHz — megahertz — A measure of frequency that equals 1 million cycles per second. The speeds for computer processors, buses, and interfaces are often measured in MHz.

Mini PCI — A standard for integrated peripheral devices with an emphasis on communications such as modems and NICs. A Mini PCI card is a small external card that is functionally equivalent to a standard PCI expansion card.

Mini-Card — A small card designed for integrated peripherals, such as communication NICs. The Mini-Card is functionally equivalent to a standard PCI expansion card.

mirroring — Duplication of data onto another computer at another location. Mirroring is performed for backup purposes or to be in close proximity to the user.

modem — A device that allows your computer to communicate with other computers over analog telephone lines. Three types of modems include: external, PC Card, and internal. You typically use your modem to connect to the Internet and exchange e-mail.

module bay — See *media bay*.

MP — megapixel — A measure of image resolution used for digital cameras.

ms — millisecond — A measure of time that equals one thousandth of a second. Access times of storage devices are often measured in ms.

N

network adapter — A chip that provides network capabilities. A computer may include a network adapter on its system board, or it may contain a PC Card with an adapter on it. A network adapter is also referred to as a *NIC* (network interface controller).

NIC — See *network adapter*.

notification area — The section of the Windows taskbar that contains icons for providing quick access to programs and computer functions, such as the clock, volume control, and print status. Also referred to as *system tray*.

ns — nanosecond — A measure of time that equals one billionth of a second.

NVRAM — nonvolatile random access memory — A type of memory that stores data when the computer is turned off or loses its external power source. NVRAM is used for maintaining computer configuration information such as date, time, and other system setup options that you can set.

O

optical drive — A drive that uses optical technology to read or write data from CDs, DVDs, or DVD+RWs. Example of optical drives include CD drives, DVD drives, CD-RW drives, and CD-RW/DVD combo drives.

P

parallel connector — An I/O port often used to connect a parallel printer to your computer. Also referred to as an *LPT port*.

partition — A physical storage area on a hard drive that is assigned to one or more logical storage areas known as logical drives. Each partition can contain multiple logical drives.

PC Card — A removable I/O card adhering to the PCMCIA standard. Modems and network adapters are common types of PC Cards.

PCI — peripheral component interconnect — PCI is a local bus that supports 32-and 64-bit data paths, providing a high-speed data path between the processor and devices such as video, drives, and networks.

PCI Express — A modification to the PCI interface that boosts the data transfer rate between the processor and the devices attached to it. PCI Express can transfer data at speeds from 250 MB/sec to 4 GB/sec. If the PCI Express chip set and the device are capable of different speeds, they will operate at the slower speed.

PCMCIA — Personal Computer Memory Card International Association — The organization that establishes standards for PC Cards.

PIO — programmed input/output — A method of transferring data between two devices through the processor as part of the data path.

pixel — A single point on a display screen. Pixels are arranged in rows and columns to create an image. A video resolution, such as 800 x 600, is expressed as the number of pixels across by the number of pixels up and down.

Plug-and-Play — The ability of the computer to automatically configure devices. Plug and Play provides automatic installation, configuration, and compatibility with existing hardware if the BIOS, operating system, and all devices are Plug and Play compliant.

POST — power-on self-test — Diagnostics programs, loaded automatically by the BIOS, that perform basic tests on the major computer components, such as memory, hard drives, and video. If no problems are detected during POST, the computer continues the start-up.

processor — A computer chip that interprets and executes program instructions. Sometimes the processor is referred to as the CPU (central processing unit).

PS/2 — personal system/2 — A type of connector for attaching a PS/2-compatible keyboard, mouse, or keypad.

PXE — pre-boot execution environment — A WfM (Wired for Management) standard that allows networked computers that do not have an operating system to be configured and started remotely.

R

RAID — redundant array of independent disks — A method of providing data redundancy. Some common implementations of RAID include RAID 0, RAID 1, RAID 5, RAID 10, and RAID 50.

RAM — random-access memory — The primary temporary storage area for program instructions and data. Any information stored in RAM is lost when you shut down your computer.

readme file — A text file included with a software package or hardware product. Typically, readme files provide installation information and describe new product enhancements or corrections that have not yet been documented.

read-only — Data and/or files you can view but cannot edit or delete. A file can have read-only status if:

- It resides on a physically write-protected floppy disk, CD, or DVD.
- It is located on a network in a directory and the system administrator has assigned rights only to specific individuals.

refresh rate — The frequency, measured in Hz, at which your screen's horizontal lines are recharged (sometimes also referred to as its *vertical frequency*). The higher the refresh rate, the less video flicker can be seen by the human eye.

resolution — The sharpness and clarity of an image produced by a printer or displayed on a monitor. The higher the resolution, the sharper the image.

RFI — radio frequency interference — Interference that is generated at typical radio frequencies, in the range of 10 kHz to 100,000 MHz. Radio frequencies are at the lower end of the electromagnetic frequency spectrum and are more likely to have interference than the higher frequency radiations, such as infrared and light.

ROM — read-only memory — Memory that stores data and programs that cannot be deleted or written to by the computer. ROM, unlike RAM, retains its contents after you shut down your computer. Some programs essential to the operation of your computer reside in ROM.

RPM — revolutions per minute — The number of rotations that occur per minute. Hard drive speed is often measured in rpm.

RTC — real time clock — Battery-powered clock on the system board that keeps the date and time after you shut down the computer.

RTCRST — real-time clock reset — A jumper on the system board of some computers that can often be used for troubleshooting problems.

S

SAS — serial attached SCSI — A faster, serial version of the SCSI interface (as opposed to the original SCSI parallel architecture).

SATA — serial ATA — A faster, serial version of the ATA (IDE) interface.

ScanDisk — A Microsoft utility that checks files, folders, and the hard disk's surface for errors. ScanDisk often runs when you restart the computer after it has stopped responding.

SCSI — small computer system interface — A high-speed interface used to connect devices to a computer, such as hard drives, CD drives, printers, and scanners. The SCSI can connect many devices using a single controller. Each device is accessed by an individual identification number on the SCSI controller bus.

SDRAM — synchronous dynamic random-access memory — A type of DRAM that is synchronized with the optimal clock speed of the processor.

serial connector — An I/O port often used to connect devices such as a handheld digital device or digital camera to your computer.

Service Tag — A bar code label on your computer that identifies your computer when you access Dell Support at **support.dell.com** or when you call Dell for customer service or technical support.

setup program — A program that is used to install and configure hardware and software. The **setup.exe** or **install.exe** program comes with most Windows software packages. *Setup program* differs from *system setup*.

shortcut — An icon that provides quick access to frequently used programs, files, folders, and drives. When you place a shortcut on your Windows desktop and double-click the icon, you can open its corresponding folder or file without having to find it first. Shortcut icons do not change the location of files. If you delete a shortcut, the original file is not affected. Also, you can rename a shortcut icon.

SIM — Subscriber Identity Module — A SIM card contains a microchip that encrypts voice and data transmissions. SIM cards can be used in phones or portable computers.

smart card — A card that is embedded with a processor and a memory chip. Smart cards can be used to authenticate a user on computers equipped for smart cards.

S/PDIF — Sony/Philips Digital Interface — An audio transfer file format that allows the transfer of audio from one file to another without converting it to and from an analog format, which could degrade the quality of the file.

standby mode — A power management mode that shuts down all unnecessary computer operations to save energy.

StrikeZone™ — Reinforced area of the platform base that protects the hard drive by acting as a dampening device when a computer experiences resonating shock or is dropped (whether the computer is on or off).

surge protectors — Prevent voltage spikes, such as those that may occur during an electrical storm, from entering the computer through the electrical outlet. Surge protectors do not protect against lightning strikes or against brownouts, which occur when the voltage drops more than 20 percent below the normal AC-line voltage level.

Network connections cannot be protected by surge protectors. Always disconnect the network cable from the network connector during electrical storms.

SVGA — super-video graphics array — A video standard for video cards and controllers. Typical SVGA resolutions are 800 x 600 and 1024 x 768.

The number of colors and resolution that a program displays depends on the capabilities of the monitor, the video controller and its drivers, and the amount of video memory installed in the computer.

S-video TV-out — A connector used to attach a TV or digital audio device to the computer.

SXGA — super-extended graphics array — A video standard for video cards and controllers that supports resolutions up to 1280 x 1024.

SXGA+ — super-extended graphics array plus — A video standard for video cards and controllers that supports resolutions up to 1400 x 1050.

system board — The main circuit board in your computer. Also known as the *system board*.

system setup — A utility that serves as an interface between the computer hardware and the operating system. System setup allows you to configure user-selectable options in the BIOS, such as date and time or system password. Unless you understand what effect the settings have on the computer, do not change the settings for this program.

T

TAPI — telephony application programming interface — Enables Windows programs to operate with a wide variety of telephony devices, including voice, data, fax, and video.

text editor — A program used to create and edit files that contain only text; for example, Windows Notepad uses a text editor. Text editors do not usually provide word wrap or formatting functionality (the option to underline, change fonts, and so on).

TPM — trusted platform module — A hardware-based security feature that when combined with security software enhances network and computer security by enabling features such as file and e-mail protection.

travel module — A plastic device designed to fit inside the module bay of a portable computer to reduce the weight of the computer.

U

UMA — unified memory allocation — System memory dynamically allocated to video.

UPS — uninterruptible power supply — A backup power source used when the electrical power fails or drops to an unacceptable voltage level. A UPS keeps a computer running for a limited amount of time when there is no electrical power. UPS systems typically provide surge suppression and may also provide voltage regulation. Small UPS systems provide battery power for a few minutes to enable you to shut down your computer.

USB — universal serial bus — A hardware interface for a low-speed device such as a USB-compatible keyboard, mouse, joystick, scanner, set of speakers, printer, broadband devices (DSL and cable modems), imaging devices, or storage devices. Devices are plugged directly in to a 4-pin socket on your computer or in to a multi-port hub that plugs in to your computer. USB devices can be connected and disconnected while the computer is turned on, and they can also be daisy-chained together.

UTP — unshielded twisted pair — Describes a type of cable used in most telephone networks and some computer networks. Pairs of unshielded wires are twisted to protect against electromagnetic interference, rather than relying on a metal sheath around each pair of wires to protect against interference.

UXGA — ultra extended graphics array — A video standard for video cards and controllers that supports resolutions up to 1600 x 1200.

V

video controller — The circuitry on a video card or on the system board (in computers with an integrated video controller) that provides the video capabilities—in combination with the monitor—for your computer.

video memory — Memory that consists of memory chips dedicated to video functions. Video memory is usually faster than system memory. The amount of video memory installed primarily influences the number of colors that a program can display.

video mode — A mode that describes how text and graphics are displayed on a monitor. Graphics-based software, such as Windows operating systems, displays in video modes that can be defined as *x* horizontal pixels by *y* vertical pixels by *z* colors. Character-based software, such as text editors, displays in video modes that can be defined as *x* columns by *y* rows of characters.

video resolution — See *resolution*.

virus — A program that is designed to inconvenience you or to destroy data stored on your computer. A virus program moves from one computer to another through an infected disk, software downloaded from the Internet, or e-mail attachments. When an infected program starts, its embedded virus also starts.

A common type of virus is a boot virus, which is stored in the boot sectors of a floppy disk. If the floppy disk is left in the drive when the computer is shut down and then turned on, the computer is infected when it reads the boot sectors of the floppy disk expecting to find the operating system. If the computer is infected, the boot virus may replicate itself onto all the floppy disks that are read or written in that computer until the virus is eradicated.

V — volt — The measurement of electric potential or electromotive force. One V appears across a resistance of 1 ohm when a current of 1 ampere flows through that resistance.

W

W — watt — The measurement of electrical power. One W is 1 ampere of current flowing at 1 volt.

WHr — watt-hour — A unit of measure commonly used to indicate the approximate capacity of a battery. For example, a 66-WHr battery can supply 66 W of power for 1 hour or 33 W for 2 hours.

wallpaper — The background pattern or picture on the Windows desktop. Change your wallpaper through the Windows Control Panel. You can also scan in your favorite picture and make it wallpaper.

WLAN — wireless local area network. A series of interconnected computers that communicate with each other over the air waves using access points or wireless routers to provide Internet access.

write-protected — Files or media that cannot be changed. Use write-protection when you want to protect data from being changed or destroyed. To write-protect a 3.5-inch floppy disk, slide its write-protect tab to the open position.

WWAN — wireless wide area network. A wireless high-speed data network using cellular technology and covering a much larger geographic area than WLAN.

WXGA — wide-aspect extended graphics array — A video standard for video cards and controllers that supports resolutions up to 1280 x 800.

X

XGA — extended graphics array — A video standard for video cards and controllers that supports resolutions up to 1024 x 768.

Z

ZIF — zero insertion force — A type of socket or connector that allows a computer chip to be installed or removed with no stress applied to either the chip or its socket.

Zip — A popular data compression format. Files that have been compressed with the Zip format are called Zip files and usually have a filename extension of **.zip**. A special kind of zipped file is a self-extracting file, which has a filename extension of **.exe**. You can unzip a self-extracting file by double-clicking it.

Zip drive — A high-capacity floppy drive developed by Iomega Corporation that uses 3.5-inch removable disks called Zip disks. Zip disks are slightly larger than regular floppy disks, about twice as thick, and hold up to 100 MB of data.

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Memory

Dell™ OptiPlex™ 760 Service Manual

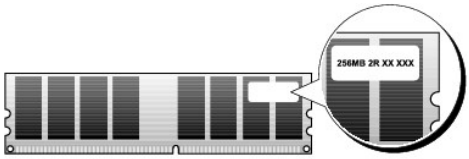
- Installing Memory Module (s)
- Removing Memory Module (s)

You can increase your computer memory by installing memory modules on the system board.

Your computer supports DDR2 memory. For additional information on the type of memory supported by your computer, see the appropriate specifications for your system in this book.

DDR2 Memory Overview

- When installed in pairs, DDR2 memory modules should be of *matched memory size and speed*. If the DDR2 memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. See the label on the upper-right or upper-left corner of the module to determine the module's capacity.



NOTE: Always install DDR2 memory modules in the order indicated on the system board.

The recommended memory configurations are:

- A pair of matched memory modules installed in DIMM connectors 1 and 2

or

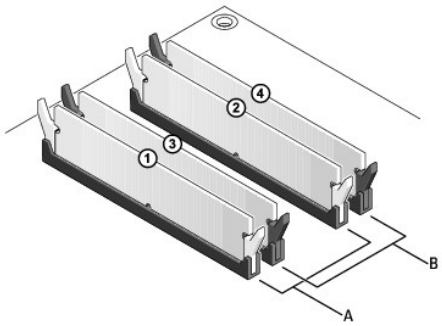
- A pair of matched memory modules installed in DIMM connectors 1 and 2 and another matched pair installed in DIMM connectors 3 and 4

CAUTION: Do not install ECC memory modules.

- If you install mixed pairs of PC2-5300 (DDR2 667-MHz) and PC2-6400 (DDR2 800-MHz) memory, the modules function at the speed of the slowest module installed.
- Be sure to install a single memory module in DIMM connector 1, the connector closest to the processor, before you install modules in any other connector.

NOTE: The Ultra Small Form Factor supports only DIMM connectors 1 and 2.

.



A	matched pair of modules in DIMM connectors 1 and 2 (white securing clips)	B	matched pair of memory modules in DIMM connectors 3 and 4 (black securing clips)

CAUTION: If you remove your original memory modules from the computer during a memory upgrade, keep them separate from any new modules that you may have, even if you purchased the new modules from Dell. If possible, do not pair an original memory module with a new memory module. Otherwise, your computer may not start properly. You should install your original memory modules in pairs either in DIMM connectors 1 and 2 or DIMM connectors 3 and 4.

NOTE: Memory purchased from Dell is covered under your computer warranty.

Addressing Memory Configurations

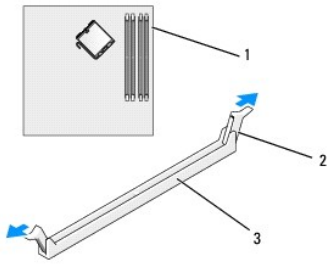
If you are using a 32-bit operating system such as Microsoft® Windows® Vista®, your computer will support a maximum of 4 GB of memory. If you are using a 64-bit operating system, your computer will support a maximum of 8 GB (2-GB DIMMs in each of the four slots) of memory.

Installing Memory Module (s)

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

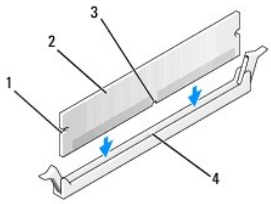
CAUTION: To avoid electrostatic discharge and damage to internal components, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see "Removing the Computer Cover" for your specific computer).
3. Press out the securing clip at each end of the memory module connector.



1	memory connector closest to processor	2	securing clips (2)
3	memory connector		

4. Align the notch on the bottom of the module with the crossbar in the connector.

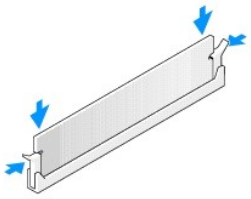


1	cutouts (2)	2	memory module
3	notch	4	crossbar

CAUTION: To avoid damage to the memory module, press the module straight down into the connector while you apply equal force to each end of the module.

5. Insert the module into the connector until the module snaps into position.

   If you insert the module correctly, the securing clips snap into the cutouts at each end of the module.



6. Replace the computer cover (see Replacing the Computer Cover).

CAUTION: To connect a network cable, first plug the cable into the network port or device and then plug it into the computer.

7. Connect your computer and devices to electrical outlets, and turn them on.
8. When the message appears stating that memory size has changed, press <F1> to continue.
9. Log on to your computer.
10. Right-click the **My Computer** icon on your Windows desktop and click **Properties**.
11. Click the **General** tab.
12. To verify that the memory is installed correctly, check the amount of memory (RAM) listed.

Removing Memory Module (s)

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To avoid electrostatic discharge and damage to internal components, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see "Removing the Computer Cover" for your specific computer).
3. Press out the securing clip at each end of the memory module connector.
4. Grasp the module and pull up.

   If the module is difficult to remove, gently ease the module back and forth to remove it from the connector.

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Dell™ OptiPlex™ 760 Service Manual

Mini Tower Computer

About Your Computer
Inside Your Computer
System Setup
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Removing and Replacing Parts
Working on Your Computer
Removing the Computer Cover
Chassis Intrusion Switch
Cards
Drives
Heat Sink and Processor
System Fan
I/O Panel
Power Supply
Speakers
Memory
Battery
Replacing the System Board
Replacing the Computer Cover

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Models: DCTR, DCNE, DCSM, and DCCY

February 2009 Rev. A01

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Dell™ OptiPlex™ 760 Service Manual

- Cards

Cards

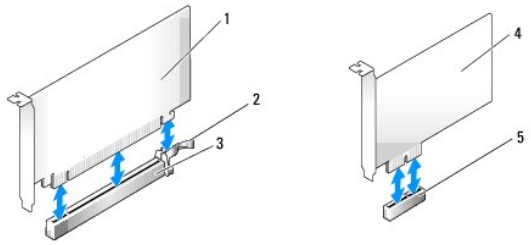
WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintains the airflow that cools your computer.

Your Dell™ computer supports a PS/2 serial port adapter and provides the following connectors for PCI and PCI Express cards:

- Two PCI card slots
- One PCI Express x16 card slot
- One PCI Express x1 card slot



1	PCI Express x16 card	2	securing tab (only for PCI Express cards)
3	PCI Express x16 card slot	4	PCI Express x1 card
5	PCI Express x1 card slot		

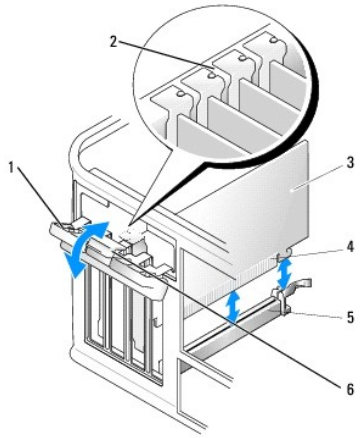
Installing a PCI or PCI Express Card

NOTE: Your Dell computer uses only PCI and PCI Express slots.

NOTE: The serial port adapter for your mini tower computer includes two PS/2 connectors.

If you are replacing a card, uninstall the driver for the existing card. See the documentation that came with the card for instructions.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently push the release tab on the card retention latch from the inside to pivot the latch open. The latch will remain in the open position.



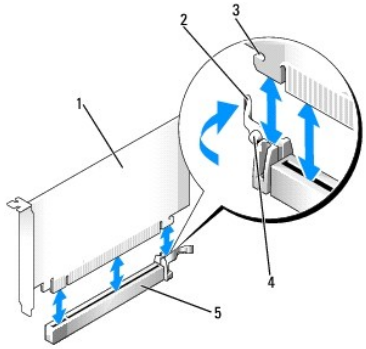
1	card retention latch	2	alignment guide
3	card	4	card-edge connector
5	card connector	6	release tab

4. If you are installing a new card, remove the filler bracket to create a card- slot opening.
5. If you are replacing a card that is already installed in the computer, remove the card. If necessary, disconnect any cables connected to the card.
6. If your card includes a card retention bar, remove the bar. Gently pull the securing tab, grasp the card by its top corners, and ease it out of its connector.
7. Prepare the new card for installation.

WARNING: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

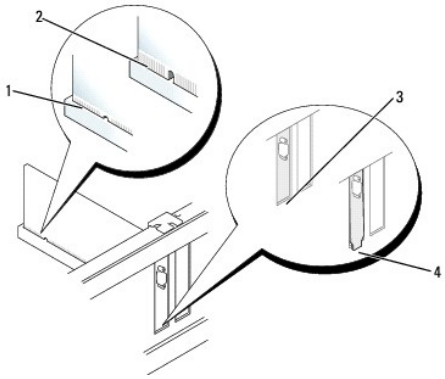
NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer.

8. If you are installing the card into the x16 card connector, position the card so that the securing slot is aligned with the securing tab, and gently pull the securing tab.



1	PCI Express x16 card	2	lever
3	securing slot (not all cards)	4	securing tab
5	PCI Express x16 card connector		

9. Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.



1	card fully seated	2	card not fully seated
3	bracket within slot	4	bracket caught outside of slot

10. Before you lower the card retention mechanism, ensure that:
    - The tops of all cards and filler brackets are flush with the alignment bar.
    - The notch in the top of the card or filler bracket fits around the alignment guide.
11. Secure the card(s) by closing the card retention latch and snapping it into place.

CAUTION: Do not route card cables over or behind the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

12. Connect any cables that should be attached to the card.

    See the documentation for the card for information about the card's cable connections.
13. Replace the computer cover (see Replacing the Computer Cover), reconnect the computer and devices to electrical outlets, and then turn them on.
14. If you installed a sound card:
    a. Enter system setup, select **System Configuration→ Miscellaneous Devices**, and change the **Audio** setting to **Disabled** (see Entering System Setup).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.

CAUTION: If you disable the integrated network adapter, you will not have Active Management Technology (AMT) functionality.

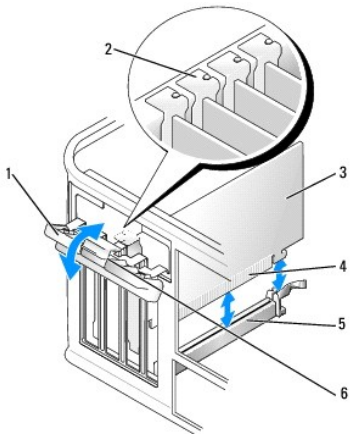
15. If you installed a network adapter card and want to turn off the integrated network adapter:
    a. Enter system setup, select **System Configuration→ Integrated NIC**, and change the setting to **Disabled** (see Entering System Setup).

CAUTION: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

    b. Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.
16. Install any drivers required for the card as described in the card documentation.

Removing a PCI or PCI Express Card

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently push the release tab on the card retention latch from the inside to pivot the latch open. The latch will remain in the open position.



1	card retention latch	2	alignment guide
3	card	4	card-edge connector
5	card connector	6	release tab

4. If necessary, disconnect any cables connected to the card.
5. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintains the airflow that cools your computer.

CAUTION: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

6. Replace the computer cover (see Replacing the Computer Cover), reconnect the computer and devices to electrical outlets, and then turn them on.
7. Uninstall the card's driver. See the documentation that came with the card for instructions.
8. If you removed a sound card:
   a. Enter system setup, select **System Configuration→ Miscellaneous Devices**, and change the **Audio** setting to **Enabled** (see Entering System Setup).
   b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.
9. If you removed a network adapter card and want to turn on the integrated network adapter:
   a. Enter system setup, select **System Configuration→ Integrated NIC**, and change the setting to **Enabled** (see Entering System Setup).
   b. Connect the network cable to the integrated the back panel of the computer.

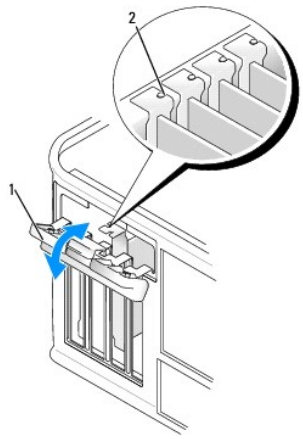
PS/2 Serial Port Adapter

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Installing a PS/2 Serial Port Adapter

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently push the release tab on the card retention latch from the inside to pivot the latch open. The latch will remain in the open position.

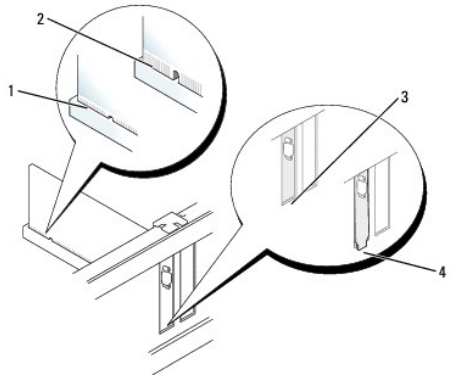


1	card retention latch	2	alignment guide

4. Remove the filler bracket (if applicable).

NOTE: See the documentation that came with the PS/2 serial port adapter for information on configuring the adapter, making internal connections, or customizing it for your computer.

5. Align the PS/2 serial port adapter bracket in the retention slot and press down firmly. Ensure that the adapter is fully seated in the slot.

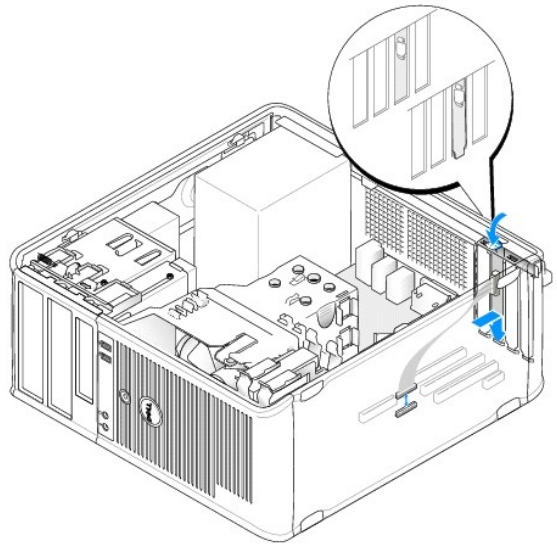


1	card fully seated	2	card not fully seated
3	bracket within slot	4	bracket caught outside of slot

6. Before you close the card retention mechanism, ensure that:
   - The tops of all adapters and filler brackets are flush with the alignment bar.
   - The notch in the top of the adapter or filler bracket fits around the alignment guide.
7. Close the card retention latch and gently press until it snaps into place.

CAUTION: Do not route cables over any installed cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

8. Connect the adapter cable to the serial port adapter connector (SERIAL2) on the system board (see System Board Components for connector locations).

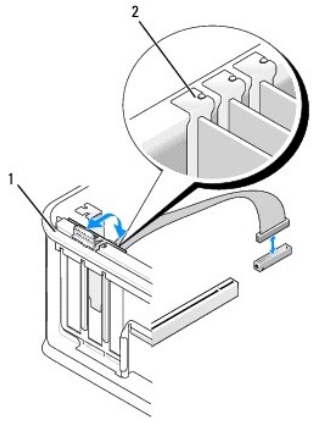


NOTE: See the documentation for the PS/2 serial port adapter for information about the cable connections.

9. Replace the computer cover (see Replacing the Computer Cover).

Removing a PS/2 Serial Port Adapter

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently push the release tab on the card retention latch from the inside to pivot the latch open. The latch will remain in the open position.



1	card retention latch	2	alignment guide

4. Disconnect the PS/2 serial adapter cable from the system board (see System Board Components).
5. If necessary, disconnect any external cables connected to the adapter.
6. Ease the PS/2 serial-port adapter bracket out of its retention slot.
7. If you are removing the adapter permanently, install a filler bracket in the empty card-slot opening.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets also keep dust and dirt out of your computer and maintains the airflow that cools your computer.

8. Before you close the card retention mechanism, ensure that:
    - The tops of all cards and filler brackets are flush with the alignment bar.
    - The notch in the top of the card or filler bracket fits around the alignment guide.
9. Secure the card(s) by closing the card retention latch and snapping it into place.
10. Replace the computer cover (see Replacing the Computer Cover).

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Dell™ OptiPlex™ 760 Service Manual

- Heat Sink and Processor

Heat Sink and Processor

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

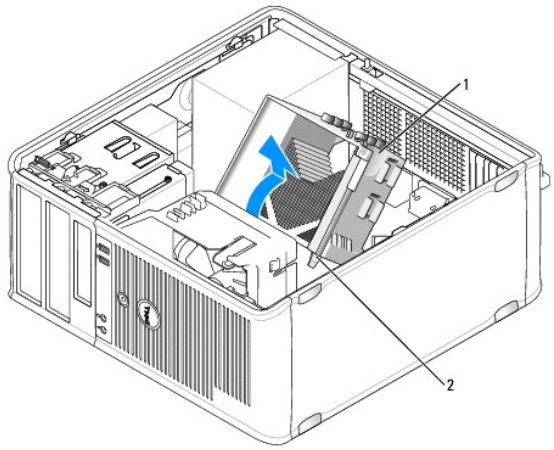
CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Removing the Processor

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

WARNING: Despite having a plastic shield, the heat sink assembly may be very hot during normal operation. Be sure that it has had sufficient time to cool before you touch it.

3. Loosen the captive screws on each side of the heat sink assembly.
4. Rotate the heat sink assembly upward, and remove it from the computer.
   Lay the heat sink down on its top, with the thermal grease facing upward.

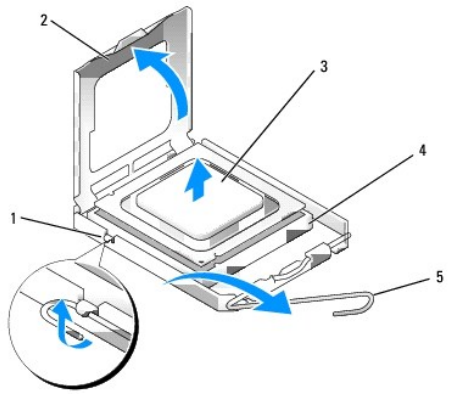


1	heat sink assembly	2	captive screw housings (2)

CAUTION: Unless a new heat sink assembly is required for the new processor, reuse the original heat sink assembly when you replace the processor.

5. Open the processor cover by sliding the release lever from under the center cover latch on the socket. Then, pull the lever back to release the processor.

CAUTION: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.



1	center cover latch	2	processor cover	3	processor
4	socket	5	release lever		

6. Gently remove the processor from the socket.

   Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

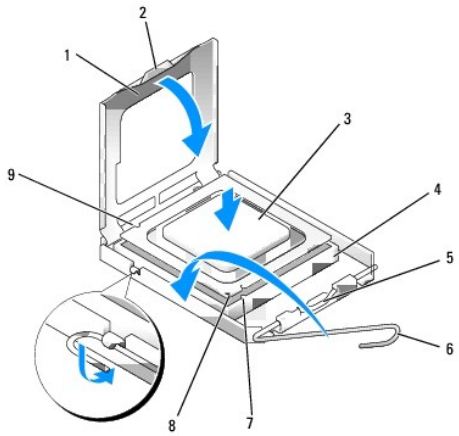
CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

CAUTION: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Unpack the new processor, being careful not to touch the underside of the processor.

   NOTE: You must position the processor correctly in the socket to avoid permanent damage to the processor and the computer when you turn on the computer.

4. If the release lever on the socket is not fully extended, move it to that position.
5. Orient the front and rear alignment-notches on the processor with the front and rear alignment-notches on the socket.
6. Align the pin-1 corners of the processor and socket.



1	processor cover	2	tab	3	processor
4	processor socket	5	center cover latch	6	release lever

7	front alignment-notch	8	socket and processor pin-1 indicator	9	rear alignment-notch

CAUTION: To avoid damage, ensure that the processor aligns properly with the socket, and do not use excessive force when you install the processor.

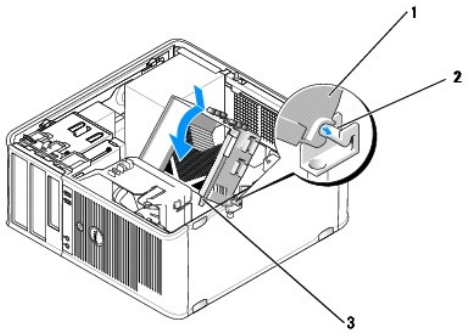
7. Set the processor lightly in the socket and ensure that the processor is positioned correctly.
8. When the processor is fully seated in the socket, close the processor cover.

   Ensure that the tab on the processor cover is positioned underneath the center cover latch on the socket.
9. Pivot the socket release lever back toward the socket, and snap it into place to secure the processor.
10. Clean the thermal grease from the bottom of the heat sink.

CAUTION: Ensure that you apply new thermal grease. New thermal grease is critical for ensuring adequate thermal bonding, which is a requirement for optimal processor operation.

11. Apply the new thermal grease to the top of the processor.
12. Install the heat sink assembly:
    a. Place the heat sink assembly back onto the heat-sink assembly bracket.
    b. Rotate the heat sink assembly down towards the computer base and tighten the two captive screws.

CAUTION: Ensure that the heat sink assembly is correctly seated and secure.



1	heat sink assembly	2	heat-sink assembly bracket
3	captive screw housing (2)		

13. Replace the computer cover (see Replacing the Computer Cover).

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Dell™ OptiPlex™ 760 Service Manual

- Chassis Intrusion Switch

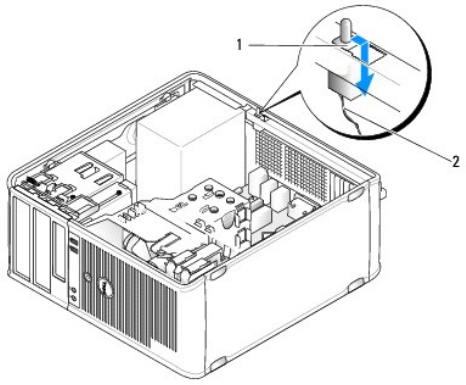
Chassis Intrusion Switch

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Chassis Intrusion Switch

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Disconnect the chassis intrusion switch cable from the system board by using two fingers to squeeze the release mechanism on one side of the connector as you pull to disconnect the cable connector.
4. Slide the chassis intrusion switch out of its slot in the metal bracket, and then push it down through the square hole in the bracket to remove the switch and its attached cable from the computer.

   NOTE: You may feel a slight resistance as you slide the switch out of the slot.



1	chassis intrusion switch	2	chassis intrusion switch cable

Replacing the Chassis Intrusion Switch

1. Gently insert the switch from underneath the metal bracket into the square hole in the bracket, and then slide the chassis intrusion switch into its slot until you feel it snap securely into place.
2. Reconnect the chassis intrusion switch cable to the system board.
3. Replace the computer cover (see Replacing the Computer Cover).

Resetting the Chassis Intrusion Detector

1. Turn on (or restart) your computer.
2. When the DELL™ logo appears, press <F12> immediately.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then shut down your computer and try again.

3. Select the **Chassis Intrusion** option and then press the left- or right-arrow key to select **Reset**. Change the setting to **On**, **On-Silent**, or **Disabled**.

NOTE: The default setting is **On-Silent**.

4. Save your BIOS settings and exit system setup.

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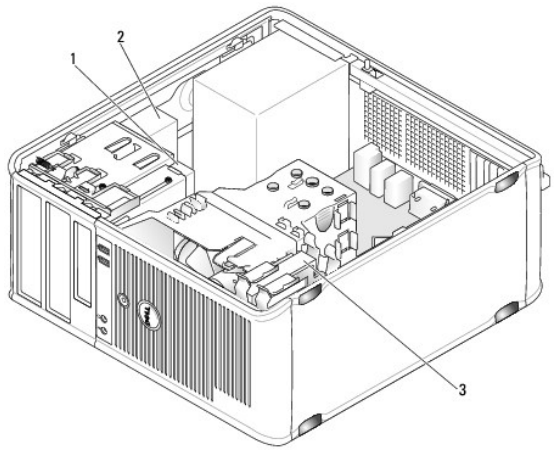
Dell™ OptiPlex™ 760 Service Manual

- Drives

Drives

Your computer supports:

- Two SATA (Serial ATA) hard drives
- One 3.5-inch floppy drive or media card reader
- Two SATA optical drives



1	3.5-inch floppy drive or media card reader	2	optical drive
3	hard drive		

General Drive Installation Guidelines

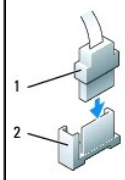
SATA connectors on the system board are labeled SATA0, SATA1, SATA2, and SATA3.

Hard drives must be connected to the lower numbered SATA connectors, while any other SATA devices (like an optical drive) must be connected to the remaining SATA connectors numbered higher than the one that the hard drive(s) is connected to. For example, if you have two SATA hard drives and one SATA optical drive, connect the two hard drives to the SATA0 and SATA1 connectors, and connect the SATA optical drive to the SATA2 connector. See System Board Components for the location of SATA connectors on the system board.

Connecting Drive Cables

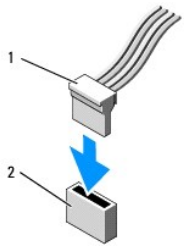
When you install a drive, you connect two cables—a DC power cable and a data interface cable—to the back of the drive.

Data Interface Connectors

SATA Connector


1	data interface cable connector	2	data interface connector

Power Cable Connectors

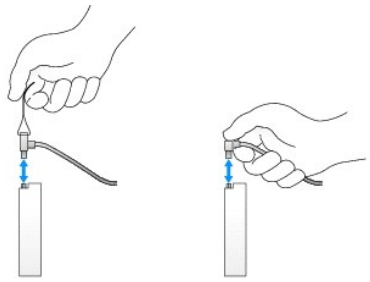


1	power cable	2	power input connector

Connecting and Disconnecting Drive Cables

When removing a cable with a pull-tab, grasp the colored pull-tab and pull until the connector detaches.

When connecting and disconnecting a cable without a pull tab, hold the cable by the black connector at each end.



Hard Drive

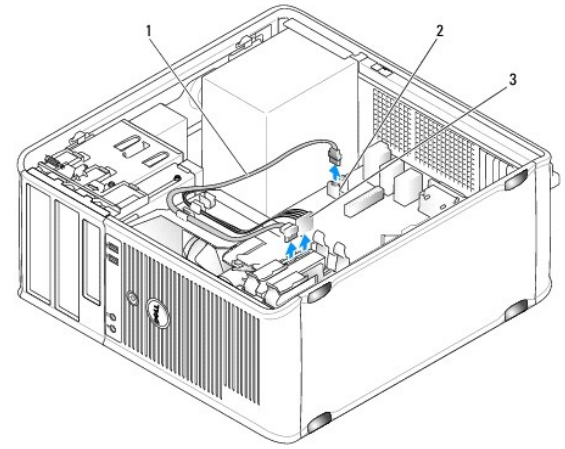
WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

CAUTION: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

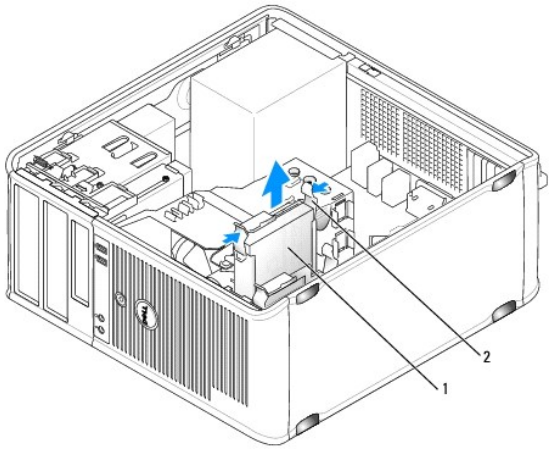
Removing a Hard Drive

1. If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.
2. Check the documentation for the drive to verify that it is configured for your computer.
3. Follow the procedures in Working on Your Computer.
4. Remove the computer cover (see Removing the Computer Cover).
5. Disconnect the power and data cables from the hard drive and system board.



1	data cable	2	hard-drive system board connector
3	power cable		

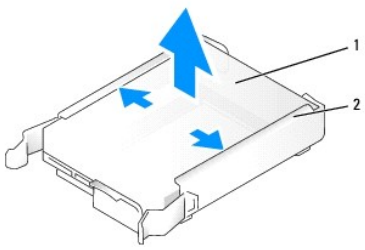
6. Press in on the blue release tabs on each side of the hard drive and slide the drive up and out of the computer.



1	hard drive	2	release tabs (2)

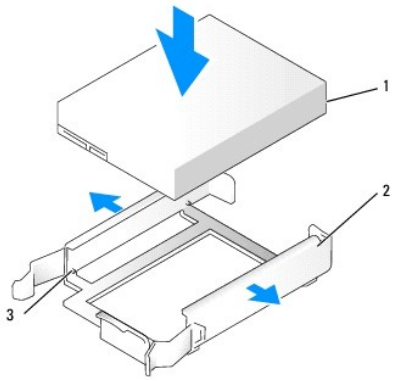
Installing a Hard Drive

1. Unpack the replacement hard drive, and prepare it for installation.
2. Check the documentation for the drive to verify that it is configured for your computer.
3. If your replacement hard drive does not have the plastic hard drive bracket attached, remove the bracket from the existing drive by unsnapping it from the drive.



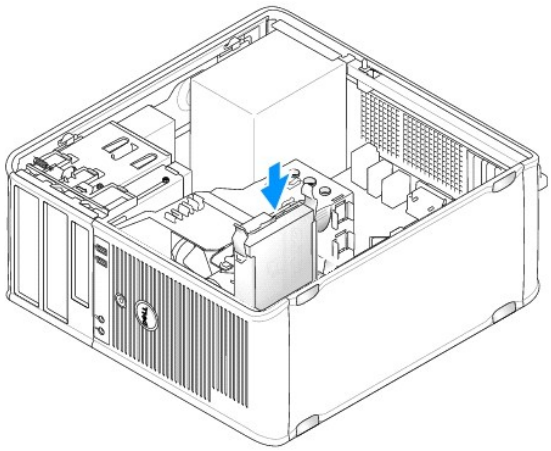
1	hard drive	2	hard-drive bracket

4. Gently spread the sides of the drive bracket and slide the hard drive into the bracket, aligning the drive with the bracket pins, until the drive clicks into place.



1	hard drive	2	hard-drive bracket
3	pins		

5. Carefully slide the hard drive into the drive bay until it clicks into place.



6. Connect the power and data cables to the drive.
7. Ensure that the data cable is securely connected to the connector on the system board.

CAUTION: Always connect the data cable to the SATA0 connector on the system board, or to the SATA1 connector if you already have a hard drive connected to the SATA0 connector and you are installing a second hard drive.

8. Check all connectors to be certain that they are properly cabled and firmly seated.
9. Replace the computer cover (see Replacing the Computer Cover).
10. Insert bootable media and enter system setup (see Entering System Setup), and update the SATA port option under the Drives option list.
11. Exit system setup, and reboot the computer.
12. Partition and logically format your drive.

    See the documentation for your operating system for instructions.
13. Test the hard drive by running the Dell Diagnostics (see Dell Diagnostics).

14. If the drive you just installed is the primary drive, install your operating system on the hard drive. If the drive you just installed is the primary drive, insert a bootable medium into your boot drive. See the documentation that came with the drive for instructions on installing any software required for drive operation.

Adding a Second Hard Drive

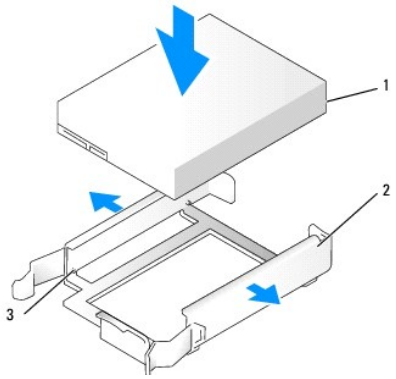
WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

CAUTION: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

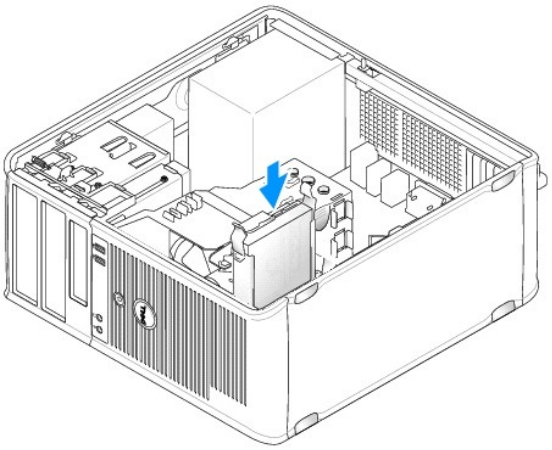
CAUTION: If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.

1. Check the documentation for the drive to verify that it is configured for your computer.
2. Follow the procedures in Working on Your Computer.
3. Remove the computer cover (see Removing the Computer Cover).
4. Remove the plastic hard drive bracket from the inside of the hard drive bay by squeezing the release tabs and gently pulling the bracket up and out of the bay.
5. Gently spread the sides of the drive bracket and slide the hard drive into the bracket, aligning the drive with the bracket pins, until the drive clicks into place.

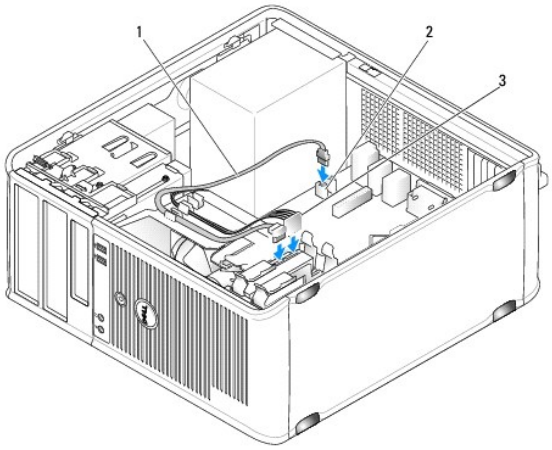


1	hard drive	2	hard drive bracket	3	pins

6. Carefully slide the new hard drive into the bay until it clicks into place.
7. Connect the power cable to the drive.



8. Locate an unused SATA connector on the system board and attach a data cable to this connector and to the second hard drive.



1	data cable	2	hard drive system board connector
3	power cable		

9. Replace the computer cover (see Replacing the Computer Cover).

10. Enter system setup (see System Setup), and update the SATA port option under the Drives option list.

11. Exit system setup, and reboot the computer.

12. Partition and logically format your drive.

    See the documentation for your operating system for instructions.

13. Test the hard drive by running the Dell Diagnostics (see Dell Diagnostics).

14. If the drive you just installed is the primary drive, install your operating system on the hard drive.

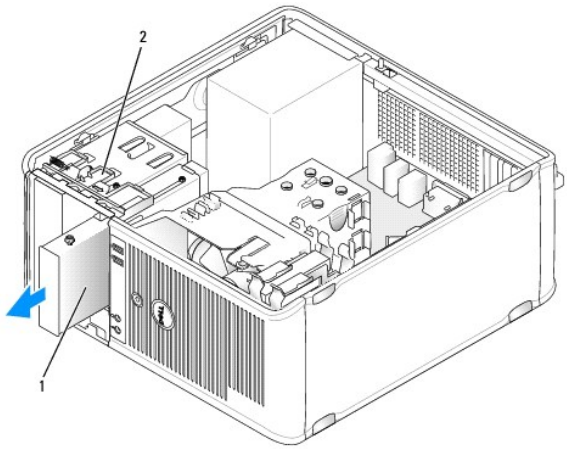
Floppy Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing the Floppy Drive

1. Boot your computer and enter system setup (see Entering System Setup). Use the **Diskette Drive** option to disable the floppy drive.
2. Follow the procedures in Working on Your Computer.
3. Remove the computer cover (see Removing the Computer Cover).
4. Remove the drive panel by sliding the drive release latch downward to open the panel, and then remove it from the hinges.
5. Disconnect the power and data cables from the back of the floppy drive and the system board.

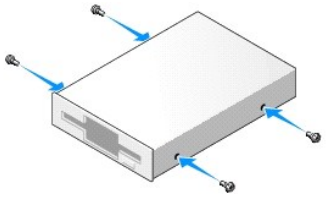


1	floppy drive	2	drive release latch

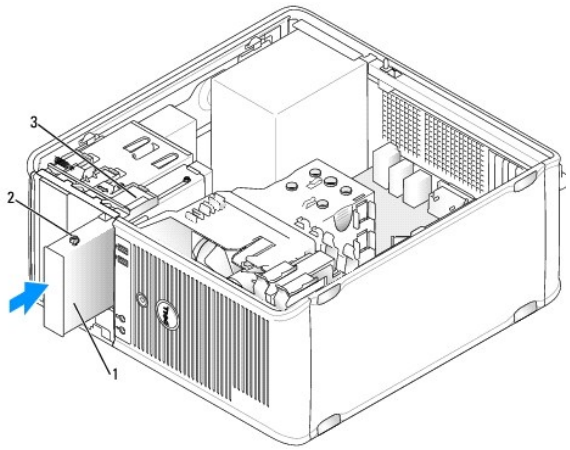
6. Grasp the sliding plate lever and slide it towards the bottom of the computer until the drive panel snaps open; while holding the lever in place, slide the drive out of the computer.

Installing the Floppy Drive

1. If you are replacing a floppy drive, remove the shoulder screws from the existing drive and attach the screws to the replacement drive.
2. If you are installing a new floppy drive, remove the drive-panel insert for the 3.5-inch drive bay, remove the shoulder screws from the inside of the drive-panel insert and attach the screws to the new drive.

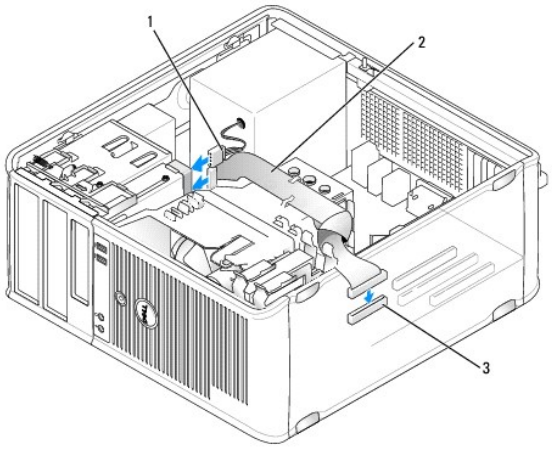


3. Align the shoulder screws on the floppy drive with the shoulder screw slots, and gently slide it into the bay until it clicks into place.



1	floppy drive	2	shoulder screws (4)
3	shoulder screw slots (2)		

4. Attach the power and data cables to the floppy drive and to the system board.



1	power cable	2	data cable
3	floppy drive connector (DSKT)		

5. Replace the computer cover (see Replacing the Computer Cover).
6. Enter system setup (see System Setup), and use the **Diskette Drive** option to enable your new floppy drive.
7. Verify that your computer works correctly by running the Dell Diagnostics (see Dell Diagnostics).

Media Card Reader

⚠ **WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.**

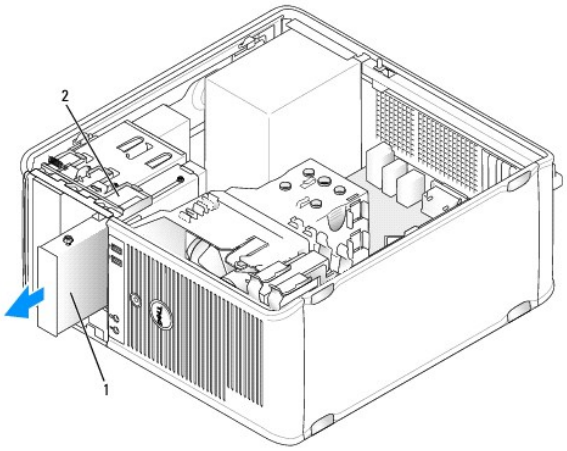
⚠ **WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.**

Removing the Media Card Reader

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

3. Remove the drive panel by sliding the drive release latch downward to open the panel, and then remove it from the hinges.

4. Disconnect the cable from the back of the media card reader.



1	media card reader	2	drive release latch

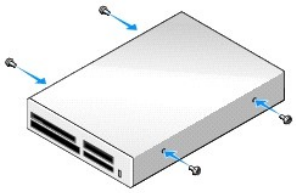
5. Grasp the sliding plate lever and slide it towards the bottom of the computer until the drive panel snaps open; while holding the lever in place, slide the media card reader out of the computer.

Installing the Media Card Reader

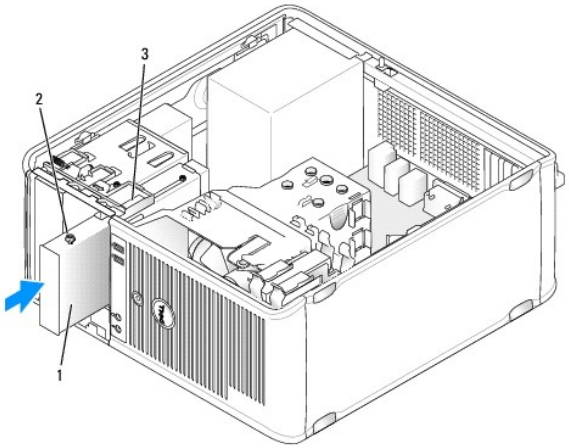
1. If you are replacing a media card reader, remove the shoulder screws from the existing drive and attach the screws to the replacement media card reader.

   NOTE: If you are replacing an existing floppy drive with a media card reader, ensure you disable the floppy before installing the media card reader. Boot your computer and enter system setup (see Entering System Setup). Use the **Diskette Drive** option to disable the floppy drive. Follow instructions in Removing the Floppy Drive.

2. If you are installing a new media card reader, remove the drive-panel insert for the 3.5-inch drive bay, remove the shoulder screws from the inside of the drive-panel insert and attach the screws to the new drive.

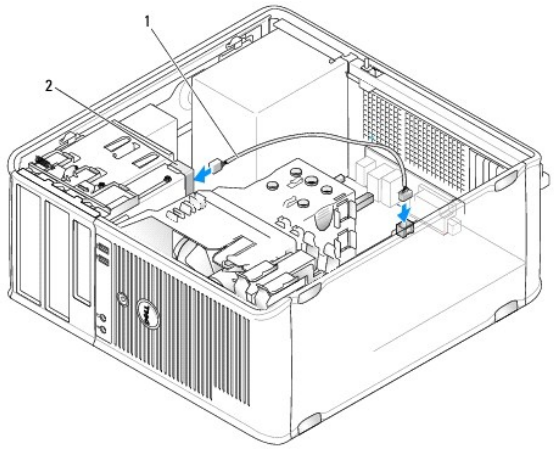


3. Align the shoulder screws on the media card reader with the shoulder screw slots, and gently slide it into the bay until it clicks into place.



1	media card reader	2	shoulder screws (4)
3	shoulder screw slots (2)		

4. Attach the cable to the media card reader and to the system board.



1	data/power cable	2	media card reader

5. Replace the computer cover (see Replacing the Computer Cover).

6. Verify that your computer works correctly by running the Dell Diagnostics (see Dell Diagnostics).

Optical Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before replacing the cover.

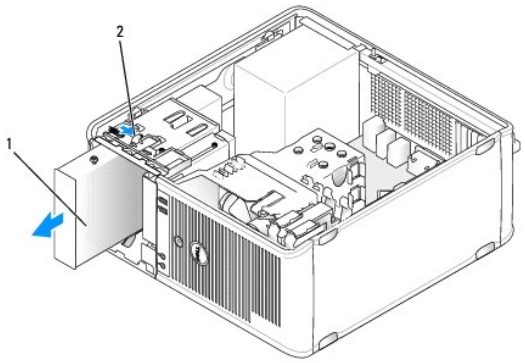
Removing an Optical Drive

1. Follow the procedures in Working on Your Computer.

2. Remove the computer cover (see Removing the Computer Cover).

3. Disconnect the power and data cables from the back of the drive and system board.

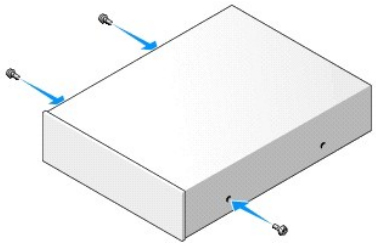
4. Grasp the sliding plate lever and slide it downwards until the drive panel snaps open; while holding the lever down, slide the drive out of the computer.



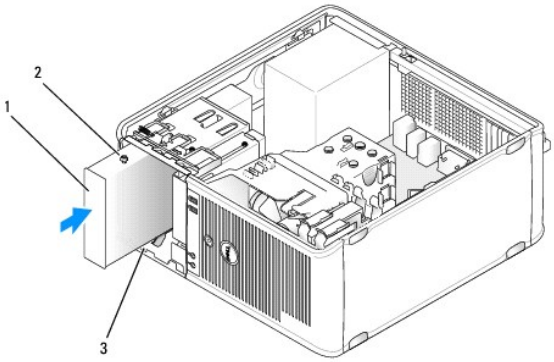
1	optical drive	2	drive release latch

Installing an Optical Drive

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. If you are replacing an optical drive, remove the shoulder screws from the existing drive and attach the screws to the replacement drive.
4. If you are installing a new optical drive, remove the drive-panel insert, remove the shoulder screws from the inside of the drive-panel insert, and attach the screws to the new drive.



5. Check the documentation that accompanied the drive to verify that the drive is configured for your computer.
6. Align the shoulder screws on the optical drive with the shoulder screw slots, and slide the drive into the bay until it clicks into place.

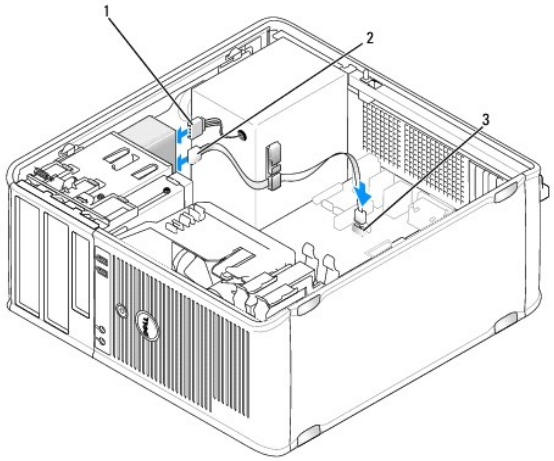


1	optical drive	2	shoulder screws (3)

3	shoulder screw slots (2)		

7. Connect the power and data cables to the drive and to the system board.

CAUTION: Always connect the optical drive SATA cable to a system board SATA connector that is labeled with a number higher than those connected to any hard drives installed in the computer.



1	power cable	2	data cable
3	SATA optical drive connector		

8. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
9. Replace the computer cover (see Replacing the Computer Cover).
10. Update your configuration information in system setup by setting the appropriate **Drive** option under **Drives** (see System Setup).
11. Verify that your computer works correctly by running the Dell Diagnostics (see the Dell Diagnostics).

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Dell™ OptiPlex™ 760 Service Manual

- I/O Panel

I/O Panel

Removing the I/O Panel

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

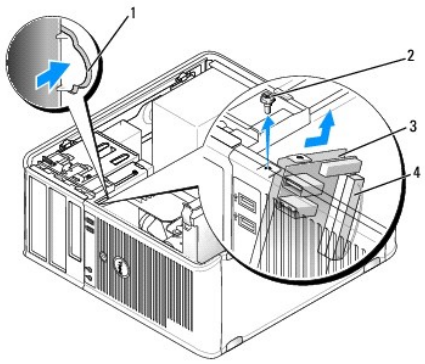
WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

NOTE: Note the routing of all cables as you remove them so that you can re-route them correctly when installing the new I/O panel.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

CAUTION: When sliding the I/O panel out of the computer, be extremely careful. Carelessness may result in damage to the cable connectors and the cable routing clips.

3. Remove the screw that secures the I/O panel. Press the release button to slide the card away from the front of the computer.
4. Disconnect all of the cables from the I/O panel, and remove the panel from the computer.



1	I/O panel release button	2	securing screw
3	I/O panel	4	I/O cable connector

Replacing the I/O Panel

1. To replace the I/O panel, follow the removal procedure in the reverse order.

NOTE: Use the guides on the I/O panel bracket to help position the I/O panel in place, and use the notch on the I/O panel bracket to help seat the panel.

Dell™ OptiPlex™ 760 Service Manual

- Power Supply

Power Supply

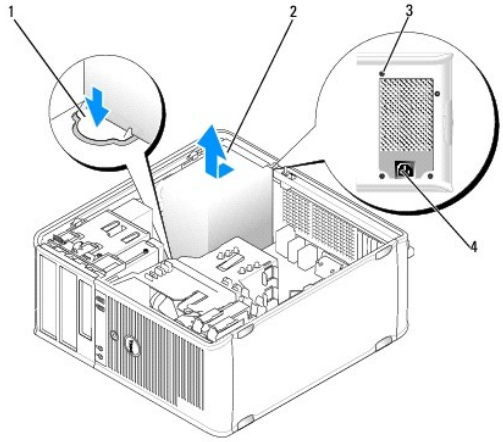
Replacing the Power Supply

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Disconnect the DC power cables from the system board and the drives.

   Note the routing of the DC power cables underneath the tabs in the computer chassis as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent them from being pinched or crimped.
4. Remove the four screws that attach the power supply to the back of the computer chassis.
5. Press the release button located on the floor of the computer chassis.

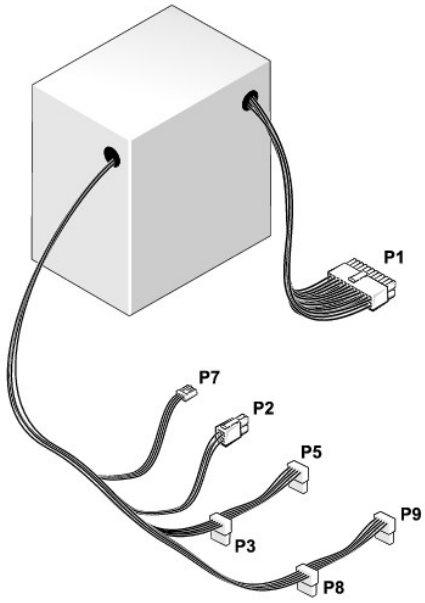


1	release button	2	power supply
3	screws (4)	4	AC power connector

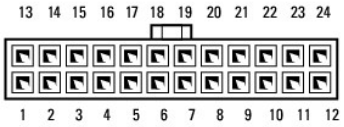
6. Slide the power supply toward the front of the computer by approximately 1 inch.
7. Lift the power supply up and out of the computer.
8. Slide the replacement power supply into place.
9. Replace the screws that secure the power supply to the back of the computer chassis.
10. Reconnect the DC power cables to the power supply.
11. Connect the AC power cable to the AC power connector.

12. Replace the computer cover (see Replacing the Computer Cover).

DC Power Connectors



DC Power Connector P1



Pin Number	Signal name	18-AWG Wire
1	+3.3 VDC	Orange
2	+3.3 VDC	Orange
3	GND	Black
4	+5 VDC	Red
5	GND	Black
6	+5 VDC	Red
7	GND	Black
8	PS_PWRGOOD	Gray
9	P5AUX	Purple
10	V_12P0_DIG	White
11	V_12P0_DIG	White
12	+3.3 VDC	Orange
13	+3.3VDC/SE*	Orange
14	-12 VDC	Blue
15	GND	Black
16	PWR_PS_ON	Green
17	GND	Black
18	GND	Black
19	GND	Black
20	NC	NC

21	+5 VDC	Red
22	+5 VDC	Red
23	+5 VDC	Red
24	GND	Black

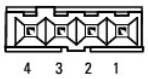
DC Power Connector P2

Pin Number	Signal Name	18-AWG Wire
1	GND	Black
2	GND	Black
3	+12 VADC	Yellow
4	+12 VADC	Yellow

DC Power Connectors P3, P5, P8, and P9

Pin Number	Signal name	18-AWG Wire
1	+3.3 VDC	Orange
2	GND	Black
3	+5 VDC	Red
4	GND	Black
5	+12 VBDC	White

DC Power Connector P7



Pin Number	Signal Name	22-AWG Wire
1	+5 VDC	Red
2	GND	Black
3	GND	Black
4	+12 VDC	Yellow

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Dell™ OptiPlex™ 760 Service Manual

- Speakers

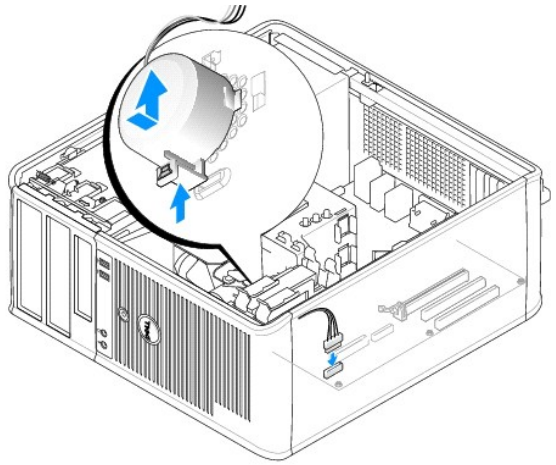
Speakers

Removing the Speaker

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.
2. Remove the cover of your computer (see Removing the Computer Cover).
3. Disconnect the cables from the system board.
4. Remove the speaker from the chassis of the computer.



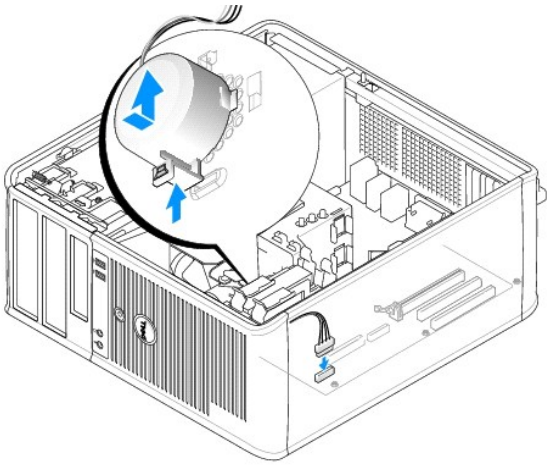
5. Replace the computer cover (see Replacing the Computer Cover).
6. Turn on power to the computer.

Installing the Speaker

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.
2. Remove the cover of your computer (see Removing the Computer Cover).
3. Insert the speaker into the chassis of the computer.



4. Connect the cables to the system board.
5. Replace the computer cover.
6. Turn on power to the computer.

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Dell™ OptiPlex™ 760 Service Manual

- System Fan

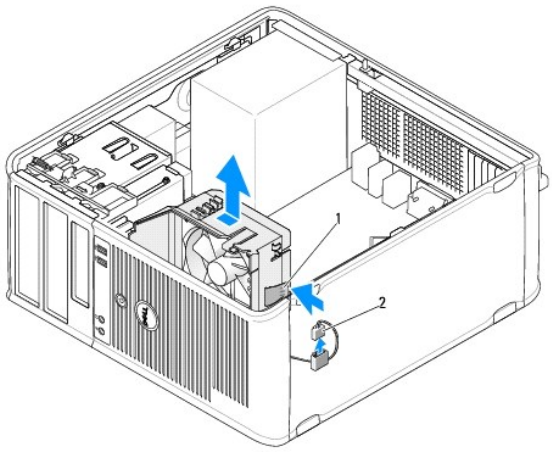
System Fan

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Removing the System Fan

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the heat sink assembly (see Removing the Processor).
4. Disconnect the power and data cables from the hard drive.
5. Disconnect the system fans power cable from the system board.



1	retention tab	2	system fan power cable

6. Pull the retention tab at the base of the fan assembly.
7. Press the retention tab close to the hard drive assembly.
8. Slide the system fan towards the back of the computer to remove the system fan assembly from the computer.

Installing the System Fan

1. To install the system fan follow the removal procedure in the reverse order.
2. Close the computer cover (see Replacing the Computer Cover).

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Mini Tower

Dell™ OptiPlex™ 760 Service Manual

- Removing the Computer Cover
- Inside Your Computer
- System Board Components

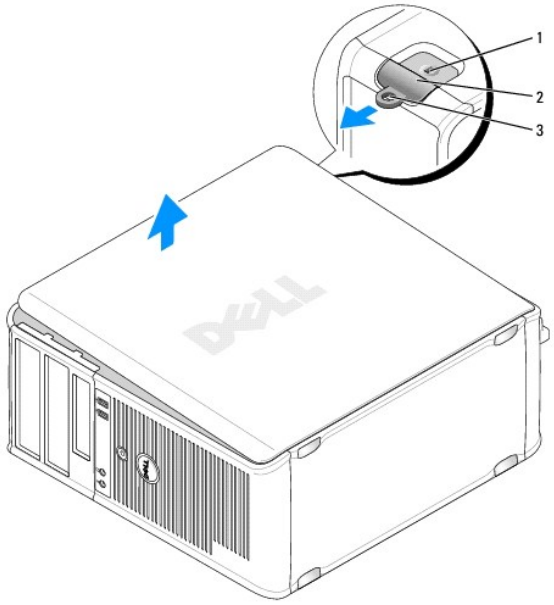
Removing the Computer Cover

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

1. Follow the procedures in Working on Your Computer.
2. If you have installed a padlock through the padlock ring on the back panel, remove the padlock.
3. Locate the cover release latch shown in the illustration. Then, pull the cover release latch back as you lift the cover.
4. Grip the sides of the computer cover and pivot the cover up using the hinge tabs as leverage points.
5. Remove the cover from the hinge tabs and set it aside on a soft nonabrasive surface.

WARNING: Graphics card heat sinks can become very hot during normal operation. Ensure that the graphics card heat sink has had sufficient time to cool before you touch it.



1	security cable slot	2	cover release latch
3	padlock ring		

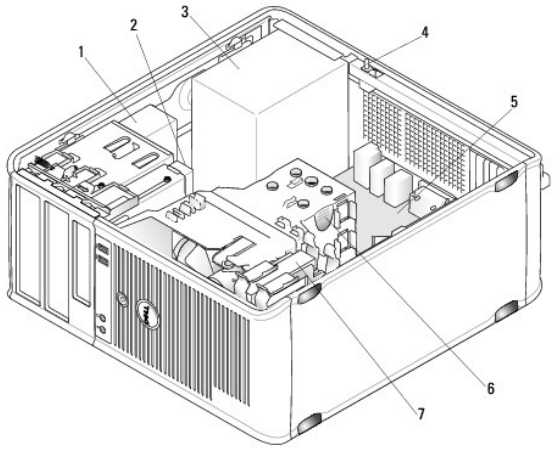
Inside Your Computer

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

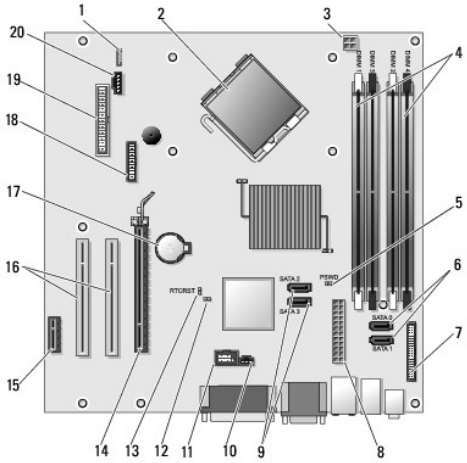
WARNING: To avoid electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

CAUTION: Be careful when opening the computer cover to ensure that you do not accidentally disconnect cables from the system board.

1	optical drive	2	disk drive
3	power supply	4	optional chassis-intrusion switch
5	system board	6	heat sink assembly
7	hard drive		



System Board Components



1	internal speaker (INT_SPKR)	2	processor connector (CPU)
3	processor power connector (12VPOWER)	4	memory module connectors (DIMM_1, DIMM_2, DIMM_3, and DIMM_4)
5	password jumper (PSWD)	6	SATA drive connectors (SATA0 and SATA1)
7	front-panel connector (FRONTPANEL)	8	power connector (POWER)
9	SATA drive connectors (SATA2 and SATA3)	10	intrusion switch connector (INTRUDER)
11	internal USB (INT_USB)	12	service mode disable jumper
13	RTC reset jumper (RTCRST)	14	PCI Express x16 connector (SLOT1)
15	PCI Express x1 connector (SLOT4)	16	PCI connector (SLOT2, SLOT3)

17	battery socket (BATTERY)	18	PS/2 or serial connector (SERIAL2)
19	floppy connector (DSKT)	20	fan (FAN_CPU)

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Replacing the Computer Cover

Dell™ OptiPlex™ 760 Service Manual

- Mini-Tower, Desktop, and Small Form Factor
- Ultra Small Form Factor

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Mini-Tower, Desktop, and Small Form Factor

1. Ensure that all cables are connected, and fold cables out of the way.

   Gently pull the power cables toward you so that they do not get caught underneath the drives.

2. Ensure that no tools or extra parts are left inside the computer.

3. To replace the cover:
   a. Align the bottom of the cover with the hinge tabs located along the bottom edge of the computer.
   b. Using the hinge tabs as leverage, rotate the cover downward to close it.
   c. Snap the cover into place by pulling back on the cover release latch and then releasing the latch when the cover is properly seated.
   d. Ensure that the cover is seated correctly before moving the computer.

CAUTION: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

4. Attach the computer stand (if applicable). For instructions, see the documentation that came with the stand.

5. Connect your computer and devices to electrical outlets, and turn them on.

   After you remove and replace the cover, the chassis intrusion detector (optional on some computers), if installed and enabled, causes the following message to appear on the screen at the next computer start-up:

   ```
   ALERT! Cover was previously removed.
   ```

6. Reset the chassis intrusion detector in System Setup by changing **Chassis Intrusio**n to **On** or **On-Silent**.

NOTE: If an administrator password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

Ultra Small Form Factor

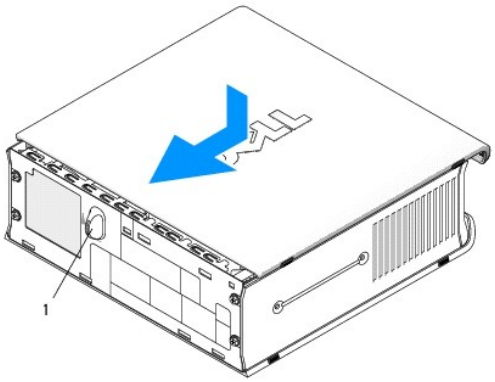
1. Follow the procedures in Working on Your Computer.

CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

2. If applicable, remove the cable cover (see Removing the Cable Cover).

3. Replace the computer cover:
   a. Tilting the cover slightly, align it with the retaining strip at the back of the system.
   b. Slide the computer cover backward until it snaps into place.

WARNING: Graphics card heat sinks can become very hot during normal operation. Ensure that a graphics card heat sink has had sufficient time to cool before you touch it.



1	release knob

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Dell™ OptiPlex™ 760 Service Manual

- Cards

Cards

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

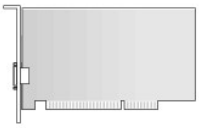
NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintains the airflow that cools your computer.

Your Dell™ computer supports a PS/2 serial port adapter and provides the following connectors for PCI and PCI Express cards:

- One low-profile PCI card slot
- One low-profile PCI Express x16 card slot

NOTE: Your Dell computer uses only PCI and PCI Express slots. ISA cards are not supported.

PCI Cards

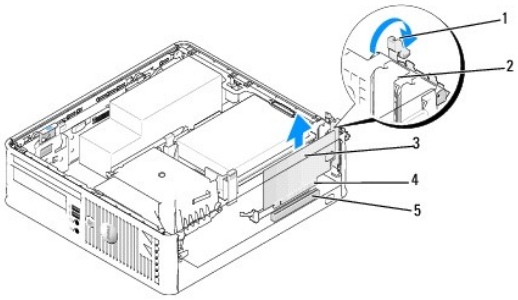


Installing a PCI Card

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

NOTE: For PCI card locations, see System Board Components.

3. Gently lift the release tab on the card retention latch from the inside and pivot the latch open.



1	release tab	2	card retention latch
3	card	4	card-edge connector
5	card connector		

4. If you are installing a new card, remove the filler bracket to create a card- slot opening. Then continue with step 6.

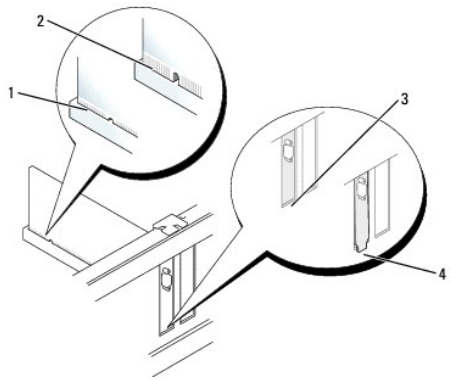
5. If you are replacing a card that is already installed in the computer, remove the card. If necessary, disconnect any cables connected to the card. Then continue with step 6.

6. Prepare the card for installation.

WARNING: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer.

7. Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.



1	card fully seated	2	card not fully seated
3	bracket within slot	4	bracket caught outside of slot

8. Before closing the card retention latch, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment guide
   - The notch in the top of the card or filler bracket fits around the alignment guide

9. Secure the card(s) by closing the card retention latch and snapping it into place.

CAUTION: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

10. Connect any cables that should be attached to the card.

11. Replace the computer cover (see Replacing the Computer Cover).

NOTE: See the documentation that came with the card regarding the card's cable connections.

12. If you installed a sound card:
    a. Enter system setup, select **System Configuration→ Miscellaneous Devices**, and change the **Audio** setting to **Disabled** (see Entering System Setup).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.

CAUTION: If you disable the integrated network adapter, you will not have AMT functionality.

13. If you installed a network adapter card and want to turn off the integrated network adapter:
    a. Enter system setup, select **System Configuration→ Integrated NIC**, and change the setting to **Disabled** (see Entering System Setup).

CAUTION: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

    b. Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.

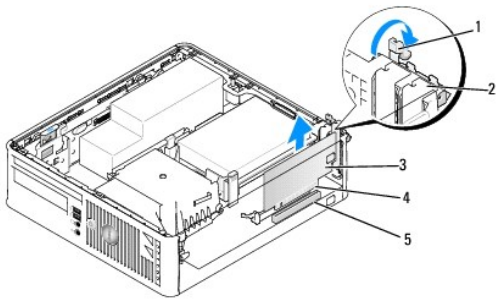
14. Install any drivers required for the card as described in the card documentation.

Removing a PCI Card

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

NOTE: For PCI card locations, see System Board Components.

3. Gently lift the release tab on the card retention latch from the inside and pivot the latch open.
4. If necessary, disconnect any cables connected to the card.
5. Grasp the card by its top corners, and ease it out of its connector.



1	release tab	2	card retention latch
3	PCI card	4	card-edge connector
5	card connector		

6. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

7. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.

CAUTION: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

8. Secure any remaining card(s) by closing the card retention latch and snapping it into place.
9. Replace the computer cover (see Replacing the Computer Cover).
10. Uninstall the card's driver. See the documentation that came with the card for instructions.
11. If you removed a sound card:
    a. Enter system setup, select **System Configuration→ Miscellaneous Devices**, and change the **Audio** setting to **Enabled** (see Entering System Setup).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.
12. If you removed a network adapter card and want to turn on the integrated network adapter:
    a. Enter system setup, select **System Configuration→ Integrated NIC**, and change the setting to **Enabled** (see Entering System Setup).

b. Connect the network cable to the integrated the back panel of the computer.

PCI Express and DVI Cards

Your computer supports one low-profile PCI Express x16 card.

If you are replacing a PCI Express card with a different type of PCI Express card, remove the current driver for the card from the operating system. See the documentation that came with the card for information.

Installing a PCI Express x16 Card or DVI Card

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

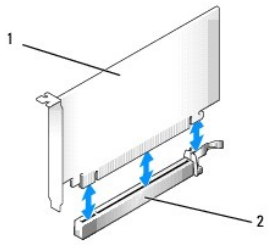
   NOTE: For PCI card locations, see System Board Components.

3. Gently lift the release tab on the card retention latch from the inside and pivot the latch open.
4. If you are installing a new PCI Express x16 card or DVI card, remove the filler bracket to create a card-slot opening.
5. If you are replacing a PCI Express x16 card or DVI card, remove the card (see Removing a PCI Express x16 Card or DVI Card). If necessary, disconnect any cables connected to the card.
6. Prepare the card for installation.

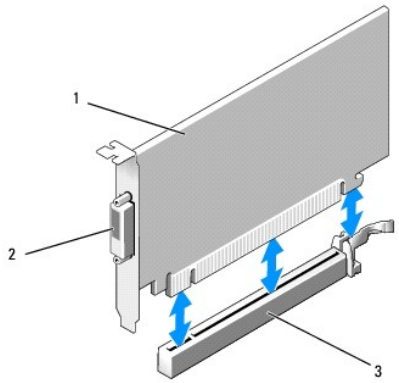
WARNING: Some network adapters automatically start the computer when they are connected to a network. To guard against electrical shock, be sure to unplug your computer from its electrical outlet before installing any cards.

NOTE: See the documentation that came with the card for information on configuring the card, making internal connections, or customizing it for your computer.

7. Place the card in the connector and press down firmly. Ensure that the card is fully seated in the slot.

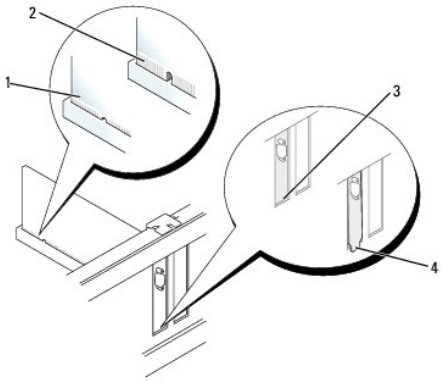


1	PCI Express x16 card	2	PCI Express x16 card connector



1	PCI Express x16 DVI-card	2	DVI card connector

3	PCI Express x16 card connector		



1	card fully seated	2	card not fully seated
3	bracket within slot	4	bracket caught outside of slot

CAUTION: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

8. Connect any cables that should be attached to the card.
9. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.
10. Secure the card(s) by closing the card retention latch and snapping it into place.
11. Replace the computer cover (see Replacing the Computer Cover).

NOTE: See the documentation for the card for information about the card's cable connections.

12. If you installed a sound card:
    a. Enter system setup, select **System Configuration** → **Miscellaneous Devices**, and change the **Audio** setting to **Disabled.** (See Entering System Setup).
    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.

CAUTION: If you disable the integrated network adapter, you will not have AMT functionality.

13. If you installed a network adapter card and want to turn off the integrated network adapter:
    a. Enter system setup, select **System Configuration** → **Integrated NIC**, and change the setting to **Disabled**. (See Entering System Setup).

CAUTION: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

    b. Connect the network cable to the network adapter card's connectors. Do not connect the network cable to the integrated network connector on the back panel of the computer.

14. Install any drivers required for the card as described in the card documentation.

Removing a PCI Express x16 Card or DVI Card

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently lift the release tab on the card retention latch from the inside and pivot the latch open.

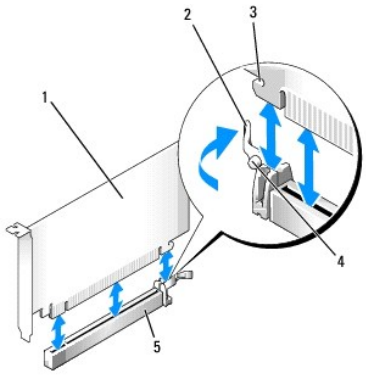
4. If necessary, disconnect any cables connected to the card.

5. Press the lever with your thumb until you release the securing tab.

   If you are removing a PCI Express x16 card, go to step 6.

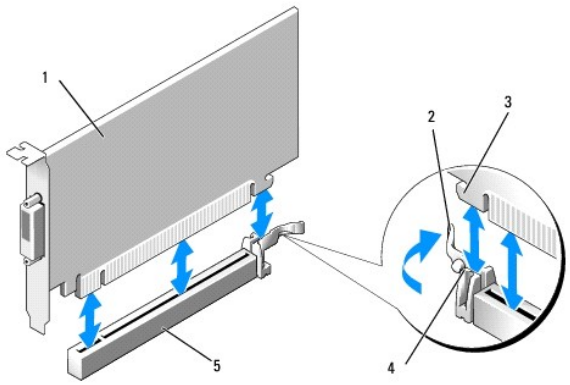
   If you are removing a DVI card, go to step 7

6. While pressing the lever, pull the card up and out of the card connector.



1	PCI Express x16 card	2	lever
3	securing slot (not all cards)	4	securing tab
5	PCI Express x16 card connector		

7. While pressing the lever, pull the removal pull tab up and remove the card out of the card connector.



1	PCI Express x16 DVI-card	2	lever
3	securing slot	4	securing tab
5	PCI Express x16 card connector		

8. If you are removing the card permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

9. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.

10. Secure any remaining card(s) by closing the card retention latch and snapping it into place.

CAUTION: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.

11. Replace the computer cover (see Replacing the Computer Cover).

12. Uninstall the card's driver. See the documentation that came with the card for instructions.

13. If you removed a sound card:

    a. Enter system setup, select **System Configuration** → **Miscellaneous Devices**, and change the **Audio** setting to **Enabled.** (See Entering System Setup).

    b. Connect external audio devices to the sound card's connectors. Do not connect external audio devices to the microphone, speaker/headphone, or line-in connectors on the back panel of the computer.

14. If you removed a network adapter card and want to turn on the integrated network adapter:

    a. Enter system setup, select **System Configuration** → **Integrated NIC**, and change the setting to **Enabled**. (See Entering System Setup).

    b. Connect the network cable to the integrated the back panel of the computer.

PS/2 Serial Port Adapter

Installing a PS/2 Serial Port Adapter

1. Follow the procedures in Working on Your Computer.

2. Remove the computer cover (see Removing the Computer Cover).

3. Gently lift the release tab on the card retention latch from the inside and pivot the latch open.

4. Remove the filler bracket (if applicable).

NOTE: See the documentation that came with the adapter for information on configuring the adapter, making internal connections, or customizing it for your computer.

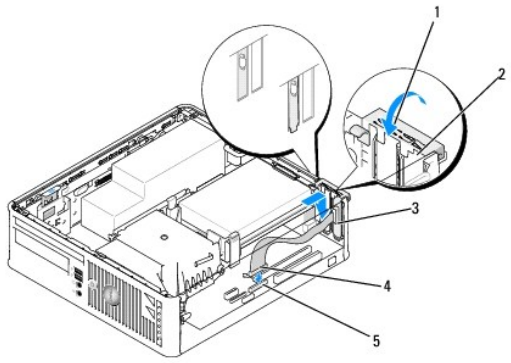
5. Align the PS/2 serial-port adapter bracket in the retention slot and press down firmly. Ensure that the adapter is fully seated in the slot.

6. Before you close the card retention mechanism, ensure that:

    - The tops of all cards and filler brackets are flush with the alignment bar.
    - The notch in the top of the card or filler bracket fits around the alignment guide.

7. Secure the card(s) by closing the card retention latch and snapping it into place.

CAUTION: Do not route card cables over the cards. Cables routed over the cards can prevent the computer cover from closing properly or cause damage to the equipment.



1	release tab	2	adapter retention latch
3	serial port adapter bracket	4	serial port adapter connector
5	serial port adapter system board connector (PS2/SERIAL2)		

8. Connect the adapter cable to the PS/2 serial port adapter connector (PS2/SERIAL2) on the system board (see System Board Components).

NOTE: See the documentation for the PS/2 serial port adapter for information about the cable connections.

9. Replace the computer cover (see Replacing the Computer Cover.

Removing a PS/2 Serial Port Adapter

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently lift the release tab on the card retention latch from the inside to pivot the latch open. Pivot the latch until it snaps into the open position.
4. Disconnect the PS/2 serial-port cable from the system board (see System Board Components).
5. Ease the PS/2 serial-port adapter bracket out of its retention slot.
6. If you are removing the adapter permanently, install a filler bracket in the empty card-slot opening.

   NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain FCC certification of the computer. The brackets keep dust and dirt out of your computer and maintain the airflow that cools your computer.

7. Before you close the card retention mechanism, ensure that:
   - The tops of all cards and filler brackets are flush with the alignment bar.
   - The notch in the top of the card or filler bracket fits around the alignment guide.
8. Secure any remaining card(s) by closing the card retention latch and snapping it into place.
9. Replace the computer cover (see Replacing the Computer Cover).

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Dell™ OptiPlex™ 760 Service Manual

- Heat Sink and Processor

Heat Sink and Processor

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance

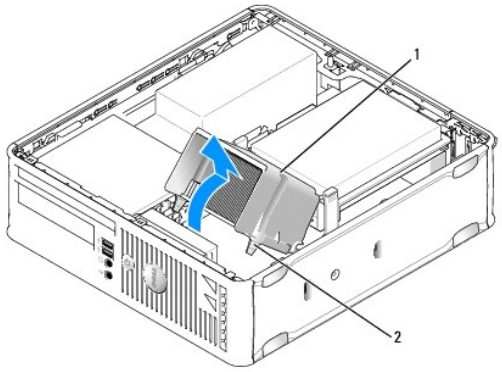
CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Removing the Processor

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

WARNING: Despite having a plastic shield, the heat sink assembly may be very hot during normal operation. Be sure that it has had sufficient time to cool before you touch it.

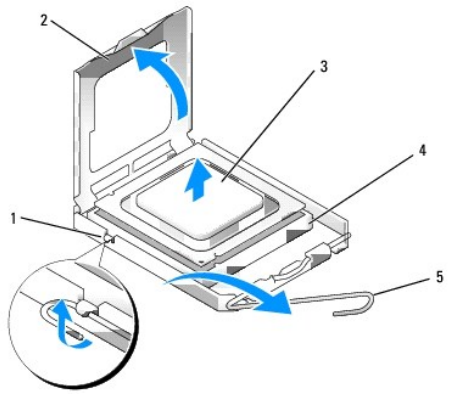
3. Remove the optical drive (see Optical Drive).
4. Loosen the captive screws on each side of the heat sink assembly.
5. Disconnect the floppy-drive data cable from the system board and release it from the securing tab on the heatsink (see Floppy Drive).
6. Rotate the heat sink assembly upward, and remove the assembly from the computer.
   Lay the heat sink down on its top, with the thermal grease facing upward.



1	heat sink assembly	2	captive screws in housing (2)

CAUTION: Unless a new heat sink is required for the new processor, reuse the original heat sink assembly when you replace the processor.

7. Open the processor cover by sliding the release lever from under the center cover latch on the socket. Then, pull the lever back to release the processor.



1	center cover latch	2	processor cover
3	processor	4	socket
5	release lever		

CAUTION: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

8. Gently remove the processor from the socket.

   Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

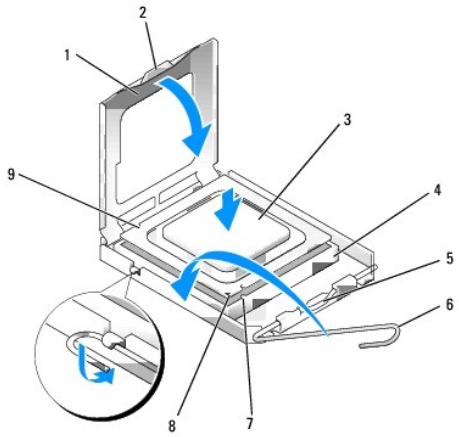
CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

CAUTION: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. If you are installing a new processor, unpack the new processor, being careful not to touch the underside of the processor.

CAUTION: You must position the processor correctly in the socket to avoid permanent damage to the processor and the computer when you turn on the computer.

4. If the release lever on the socket is not fully extended, move it to that position.
5. Orient the front and rear alignment-notches on the processor with the front and rear alignment-notches on the socket.
6. Align the pin-1 corners of the processor and socket.



1	processor cover	2	tab
3	processor	4	processor socket
5	center cover latch	6	release lever
7	front alignment-notch	8	socket and processor pin-1 indicator
9	rear alignment-notch		

CAUTION: To avoid damage, ensure that the processor aligns properly with the socket, and do not use excessive force when you install the processor.

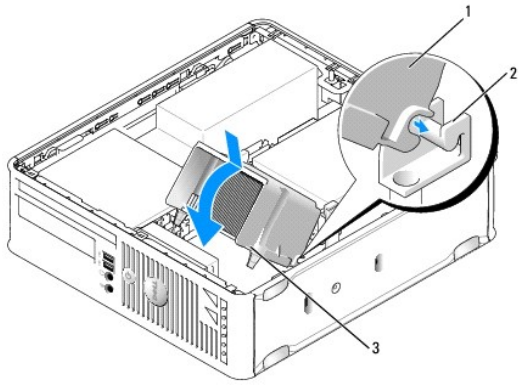
7. Set the processor lightly in the socket and ensure that the processor is positioned correctly.
8. When the processor is fully seated in the socket, close the processor cover.

   Ensure that the tab on the processor cover is positioned underneath the center cover latch on the socket.
9. Pivot the socket release lever back toward the socket and snap it into place to secure the processor.
10. Clean the thermal grease from the bottom of the heat sink.

CAUTION: Ensure that you apply new thermal grease. New thermal grease is critical for ensuring adequate thermal bonding, which is a requirement for optimal processor operation.

11. Apply the new thermal grease to the top of the processor.
12. Install the heat sink assembly:
    a. Place the heat sink assembly back onto the heat-sink assembly bracket.
    b. Rotate the heat sink assembly down towards the computer base and tighten the two captive screws.

CAUTION: Ensure that the heat sink is correctly seated and secure.



1	heat sink assembly	2	heat-sink assembly bracket
3	captive screw in housing (2)		

13. Route the floppy drive cable through the securing tab on the heat sink and connect it to the system board.

14. Replace the optical drive (see Optical Drive).

15. Replace the computer cover (see Replacing the Computer Cover).

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Dell™ OptiPlex™ 760 Service Manual

- Chassis Intrusion Switch

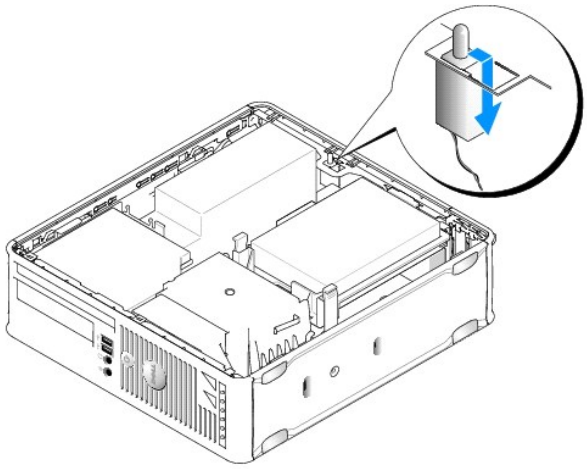
Chassis Intrusion Switch

⚠ **WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.**

Removing the Chassis Intrusion Switch

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the hard drive (see Removing a Hard Drive).
4. Disconnect the chassis intrusion switch cable from the system board by using two fingers to squeeze the release mechanism on one side of the connector as you pull to disconnect the cable connector.
5. Slide the chassis intrusion switch out of its slot in the metal bracket, and then push it down through the square hole in the bracket to remove the switch and its attached cable from the computer.

   NOTE: You may feel a slight resistance as you slide the switch out of the slot.



Replacing the Chassis Intrusion Switch

1. Gently insert the switch from underneath the metal bracket into the square hole in the bracket, and then slide the chassis intrusion switch into its slot until it snaps securely into place.
2. Reconnect the cable to the system board.
3. Replace the hard drive (see Installing a Hard Drive).
4. Replace the computer cover (see Replacing the Computer Cover).
5. If you are using a computer stand, attach it to the computer.

Resetting the Chassis Intrusion Detector

1. Turn on (or restart) your computer.

2. When the DELL™ logo appears, press <F12> immediately.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then shut down your computer and try again.

3. Select **System Setup**.

4. Select **Security** →**Chassis Intrusion** and then select the **Clear Intrusion Warning** option to reset the chassis intrusion detector. Change the setting to **On**, **On-Silent**, or **Disabled**.

NOTE: The default setting is **On-Silent**.

5. Save your BIOS settings and exit system setup.

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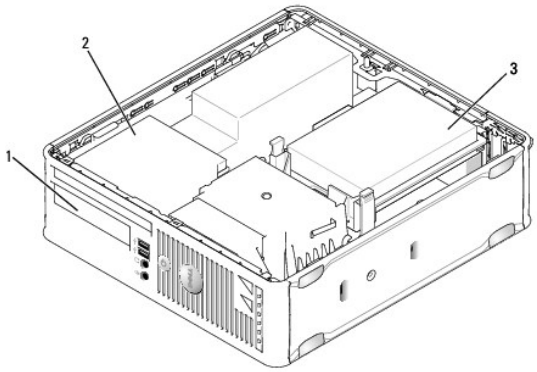
Dell™ OptiPlex™ 760 Service Manual

- Drives

Drives

Your computer supports:

- One SATA (serial ATA) hard drive
- One slimline floppy drive or media card reader
- One SATA slimline optical drive



1	3.5-inch drive bay for optional floppy drive or media card reader	2	slimline optical drive
3	hard drive		

General Installation Guidelines

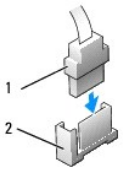
SATA connectors on the system board are labeled SATA0 and SATA1. Hard drives must be connected to SATA0, while any other SATA devices (like an optical drive) must be connected to SATA1. For example, if you have a SATA hard drive and a SATA optical drive, connect the hard drive to the SATA0, and connect the SATA optical drive to the SATA1 connector. See System Board Components for the location of the SATA connectors on the system board.

Connecting Drive Cables

When you install a drive, you connect two cables (a DC power cable and a data interface cable) to the back of the drive.

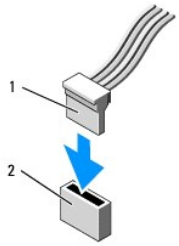
Data Interface Connectors

Serial ATA (SATA) Connector



1	data interface cable connector	2	data interface connector

Power Cable Connectors

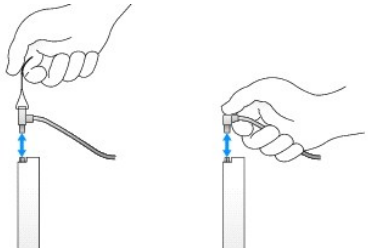


1	power cable	2	power input connector

Connecting and Disconnecting Drive Cables

When removing an cable with a pull-tab, grasp the colored pull-tab and pull until the connector detaches.

When connecting and disconnecting a SATA data cable, hold the cable by the black connector at each end.



Hard Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

CAUTION: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

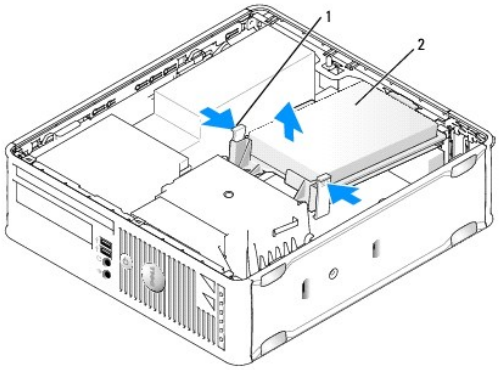
Removing a Hard Drive

CAUTION: If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.

1. Check the documentation for the drive to verify that it is configured for your computer.
2. Follow the procedures in Working on Your Computer.
3. Remove the computer cover (see Removing the Computer Cover).

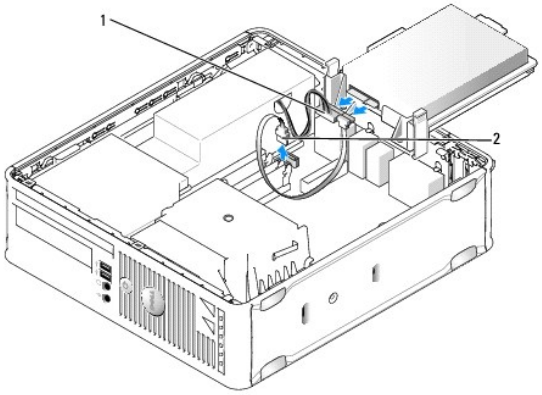
CAUTION: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

4. Press in on the two blue securing tabs on each side of the drive and lift the drive up and away from the computer, careful not to pull the cables still attached to it.



1	securing tabs (2)	2	hard drive

5. Disconnect the power and data cable from the hard drive.
6. Disconnect the data cable from the system board.
7. Disconnect the hard-drive fan cable from the system board and set the hard drive aside.



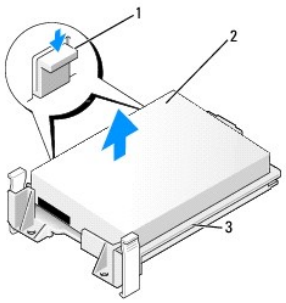
1	power cable	2	data cable

Installing a Hard Drive

1. Check the documentation for the drive to verify that it is configured for your computer.

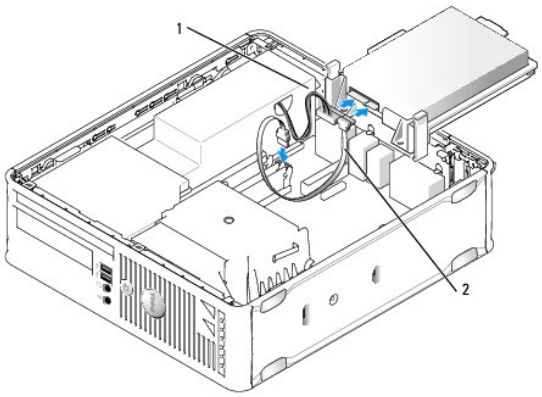
△ **CAUTION: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.**

2. Unpack the replacement hard drive, and prepare it for installation.
3. If your replacement hard drive does not have the plastic drive bracket attached, remove the bracket from the existing drive by unsnapping it from the drive.



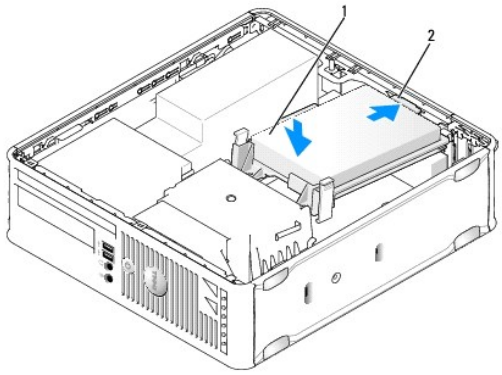
1	release tabs (2)	2	hard drive
3	hard-drive bracket		

4. Connect the hard drive fan cable to the system board.
5. Connect the power and data cables to the hard drive.
6. Connect the data cable to the system board.



1	power cable	2	data cable

7. Check all connectors to ensure that they are properly cabled and firmly seated.
8. Align the hard drive tab with the chassis and gently position the drive until it clicks into place.



1	hard drive	2	hard-drive tab

9. Replace the computer cover (see Replacing the Computer Cover).

10. If the drive you just installed is the primary drive, insert a bootable media into your boot drive.
11. Turn on the computer.
12. Enter system setup, and update the SATA port option under **Drives** option list (see Entering System Setup).
13. Exit system setup, and reboot the computer.
14. Partition and logically format your drive.

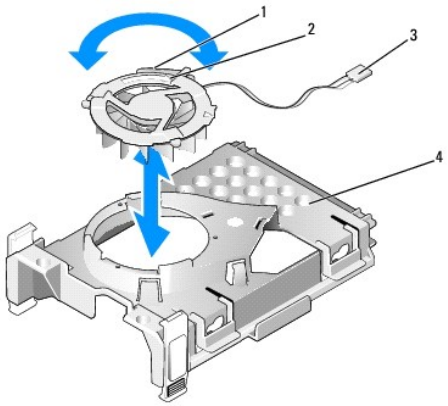
NOTE: For instructions, see the documentation that came with your operating system.

15. Test the hard drive by running the Dell Diagnostics (see Dell Diagnostics).
16. Install your operating system on the hard drive.

NOTE: For instructions, see the documentation that came with your operating system.

Replacing a Hard Drive Fan

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the hard drive (see Removing a Hard Drive).
4. Turn the hard drive upside down, so that the hard drive fan is visible at the bottom of the drive bracket.
5. To remove the hard drive fan:
   a. Lift the release tab on the back panel of the fan.
   b. Rotate the fan in the direction opposite to the direction indicated by the arrow on the back panel of the fan.
   c. Lift to remove the fan and its back panel from the hard drive bracket.



1	fan release tab	2	arrow on the back panel of the fan
3	power cable	4	hard drive bracket

6. To replace the hard drive fan:
   a. Align the triangle on the fans back panel with the triangle on the hard-drive brackets back panel.
   b. Rotate the fan in the direction of the arrow on the back panel of the fan.
7. Install the hard drive (see Installing a Hard Drive).
8. Replace the computer cover (see Replacing the Computer Cover).

Optical Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

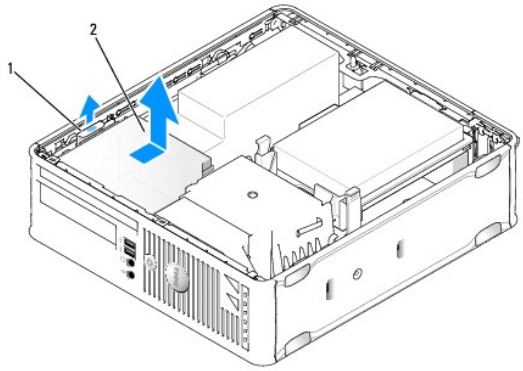
WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing an Optical Drive

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).

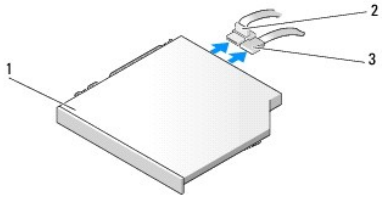
CAUTION: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

3. Pull the drive release latch and slide the drive towards the back of the computer. Then lift up to remove the drive from the computer.



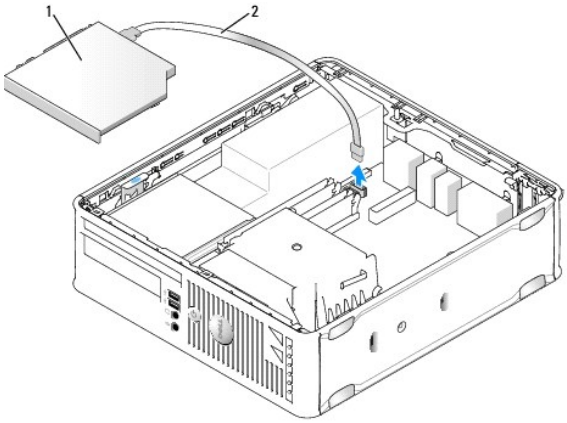
1	drive release latch	2	optical drive

4. Disconnect the power and data cable from the back of the drive.



1	optical drive	2	data cable
3	power cable		

5. Disconnect the data cable from the system board.

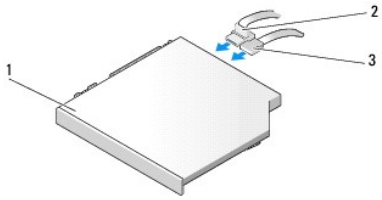


1	optical drive	2	data cable

6. Remove the drive and replace the computer cover (see Replacing the Computer Cover).

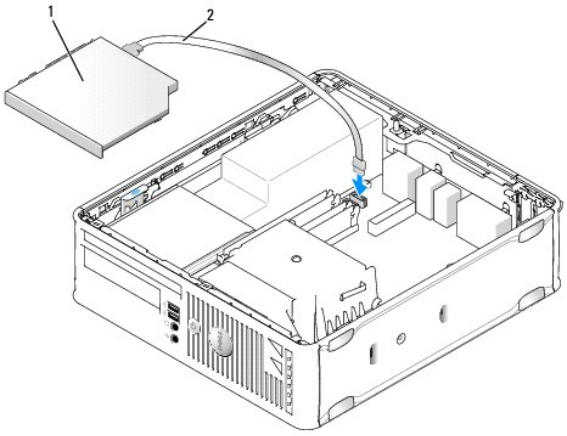
Installing an Optical Drive

1. Unpack the drive and prepare it for installation.
2. Check the documentation that accompanied the drive to verify that the drive is configured for your computer.
3. Follow the procedures in Working on Your Computer.
4. Remove the computer cover (see Removing the Computer Cover).
5. Connect the power and data cable to the drive.



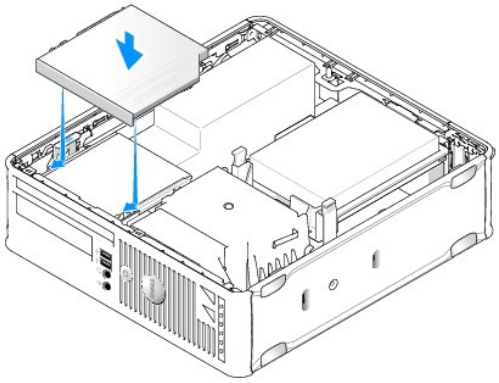
1	optical drive	2	data cable
3	power cable		

6. Connect the data cable to the system board.



1	optical drive	2	data cable

7. Gently position the drive until it clicks into place.



8. Check all cable connections and fold cables out of the way to provide airflow for the fan and cooling vents.
9. Replace the computer cover (see Replacing the Computer Cover).
10. See the documentation that came with the drive for instructions on installing any software required for drive operation.
11. Enter system setup and select the appropriate **Drive** option (see Entering System Setup).
12. Verify that your computer works correctly by running the Dell Diagnostics (see Dell Diagnostics).

Floppy Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

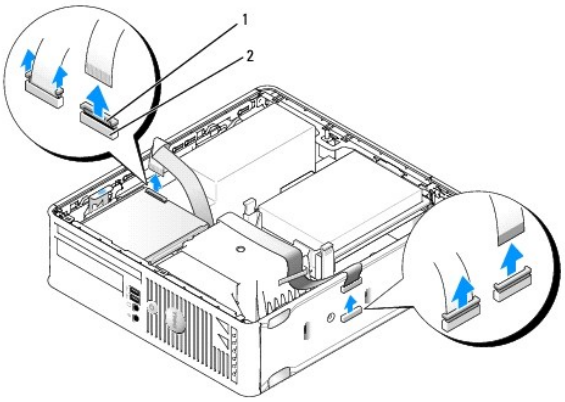
WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing a Floppy Drive

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the optical drive and carefully set it aside (see Optical Drive).

CAUTION: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

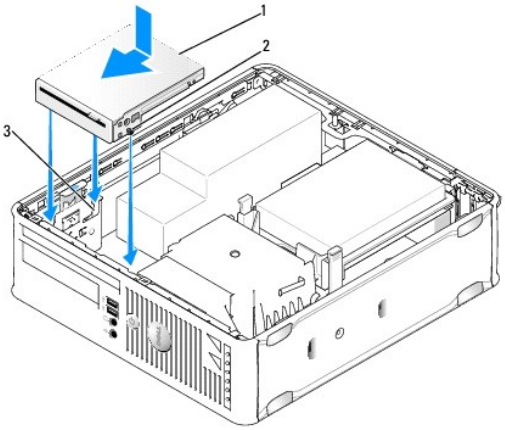
4. Pull the cable release tab to disconnect the data cable from the system board.
5. Pull the drive release latch and slide the floppy drive towards the back of the computer. Then lift up to remove the drive.
6. Gently lift the data cable from the floppy data cable edge connector.



1	cable release tab	2	data cable edge connector

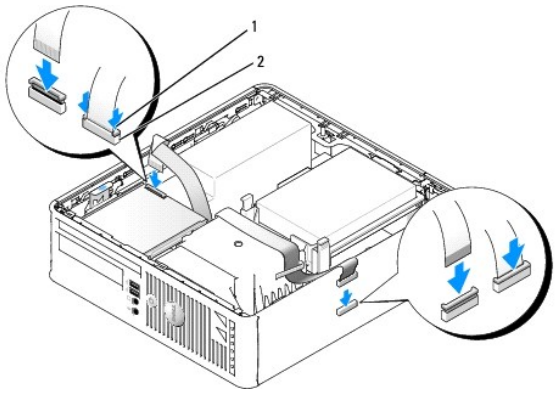
7. Replace the computer cover (see Replacing the Computer Cover).

Installing a Floppy Drive



1	floppy drive	2	screws (3)
3	bracket slots (3)		

1. If you are:
   - Installing a new floppy drive, remove the drive panel insert.
   - Replacing a drive, remove the floppy drive (see Removing a Floppy Drive).
2. Align the screws on the drive with the bracket slots in the computer and gently position the drive until it clicks into place.
3. Insert the data cable into the cable release tab on the floppy drive and press down on the tab until it clicks to lock it in place.
4. Insert the data cable into the connector on the system board.



1	cable release tab	2	floppy drive data cable edge connector

5. Replace the optical drive (see Optical Drive).
6. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
7. Replace the computer cover (see Replacing the Computer Cover).
8. Enter system setup and use the **Diskette Drive** option to enable your new floppy drive (see System Setup).

   See the documentation that came with the drive for instructions on installing any software required for drive operation.
9. Verify that your computer works correctly by running the Dell Diagnostics (see Dell Diagnostics).

Media Card Reader

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

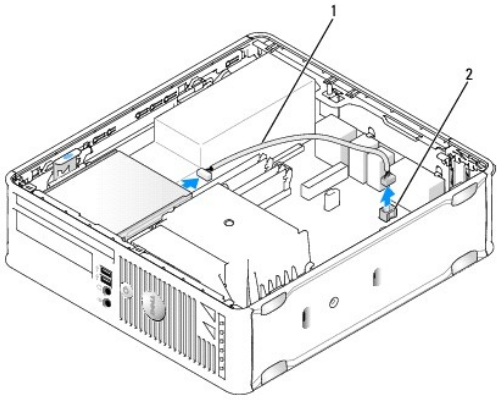
WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

Removing a Media Card Reader

1. Follow the procedures in Working on Your Computer.
2. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
3. Remove the computer cover (see Removing the Computer Cover).
4. Remove the optical drive and carefully set it aside (see Optical Drive).

CAUTION: Do not pull the drive out of the computer by the drive cables. Doing so may cause damage to cables and the cable connectors.

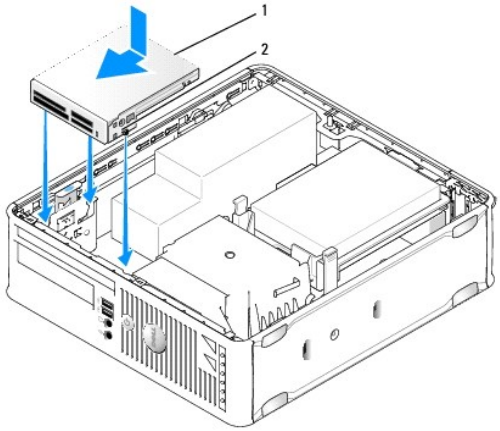
5. Remove the cable from the media card reader connector.
6. Remove the hard drive (see Removing a Hard Drive).
7. Disconnect the media card reader cable from the system board.



1	media card reader cable	2	INT_USB connector on the system board

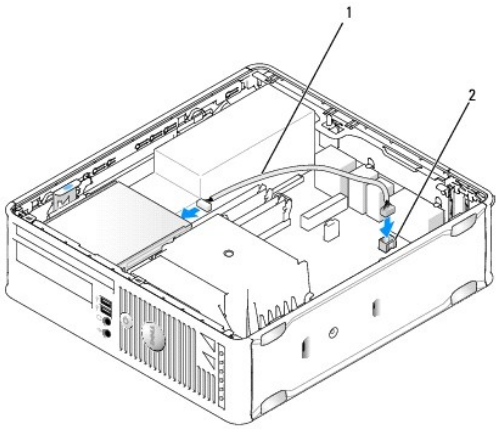
8. Pull the drive release latch and slide the media card reader towards the back of the computer. Then lift up to remove the media card reader from the computer.
9. Replace the hard drive (see Installing a Hard Drive).
10. Replace the computer cover (see Replacing the Computer Cover).

Installing a Media Card Reader



1	media card reader	2	screws (3)

1. If you are replacing a media card reader, remove the installed media card reader (see Removing a Media Card Reader), and skip to step 3.
2. If you are installing a new media card reader, perform the following steps before continuing to step 3:
   a. Follow the procedures in Working on Your Computer.
   b. Remove the computer cover (see Removing the Computer Cover).
   c. Lay the computer on its side so that the system board is on the bottom of the inside of the computer.
   d. Remove the drive panel insert.
3. Align the screws on the media card reader with the bracket slots in the computer, and gently position the drive until it clicks into place.
4. Connect the cable into the connectors on the media card reader and INT_USB connector on the system board.



1	media card reader data cable	2	INT_USB connector on the system board

5. Replace the optical drive (see Optical Drive).
6. Check all cable connections, and fold cables out of the way to provide airflow for the fan and cooling vents.
7. Replace the computer cover (see Replacing the Computer Cover).
8. See the documentation that came with the drive for instructions on installing any software required for drive operation.
9. Verify that your computer works correctly by running the Dell Diagnostics (see Dell Diagnostics).

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Dell™ OptiPlex™ 760 Service Manual

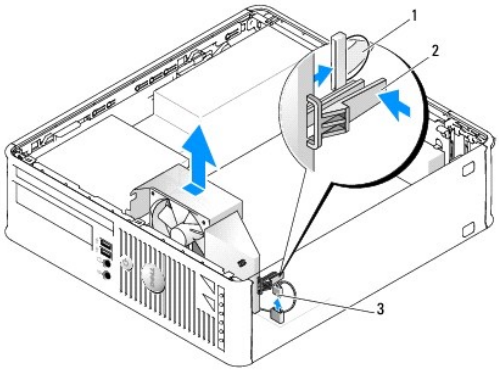
- System Fan

System Fan

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the System Fan

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the heat sink assembly and processor (see Removing the Processor).
4. Remove the system board (see Removing the System Board).
5. Disconnect the diagnostics lights cable from the fan assembly.
6. Press the tab that secures the fan to computer chassis and push the fan away from the computer chassis.
7. Lift the system fan up and away from the computer.



1	diagnostic lights cable	2	retention tab
3	system fan power cable		

Installing the System Fan

To replace the fan, follow the removal procedures in the reverse order.

Dell™ OptiPlex™ 760 Service Manual

- I/O Panel

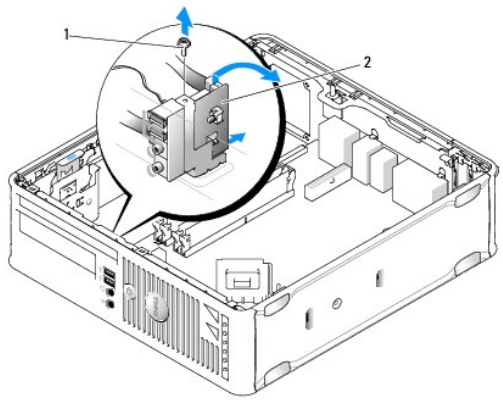
I/O Panel

Removing the I/O Panel

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the optical drive and floppy drive from the drive bays, if installed (see Drives).
4. Remove the hard drive (see Removing a Hard Drive).
5. Remove the processor heat sink assembly (see Heat Sink and Processor).
6. Remove the heat sink base by loosening the two screws that retain the heat sink base to the system board.
7. Remove the system fan (see Removing the System Fan).
8. Disconnect the air sensor cable from the computer chassis by pressing the release tabs on either side of the air sensor.
9. From inside the computer cover, remove the mounting screw that secures the I/O panel to the computer.



1	screw	2	I/O panel

10. Using a small flat-blade screwdriver, gently pry the I/O panel bracket to release its circular tabs from the two holes in the chassis that secure it.
11. Remove the I/O panel from the computer.

Replacing the I/O Panel

To replace the I/O panel, follow the removal procedures in the reverse order.

NOTE: Use the guides on the I/O panel bracket to help position the I/O panel in place and use the notch on the I/O panel bracket to help seat the card.

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Dell™ OptiPlex™ 760 Service Manual

- Power Supply

Power Supply

Replacing the Power Supply

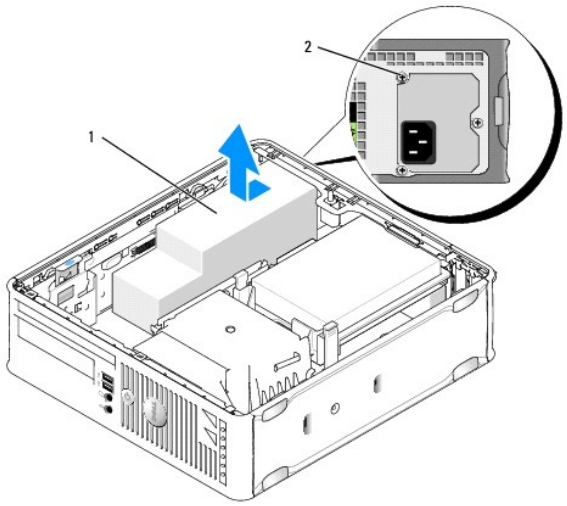
WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. If installed, remove the optical drive (see Removing an Optical Drive).
4. If installed, remove the floppy drive or media card reader (see Floppy Drive).
5. Disconnect the DC power cables from the system board and the drives.

   NOTE: Remember the routing of the DC power cables underneath the tabs in the computer frame as you remove them from the system board and drives. You must route these cables properly when you replace them to prevent their being pinched or crimped.

6. Remove the three screws that attach the power supply to the computer chassis.



1	power supply	2	mounting screws (3)

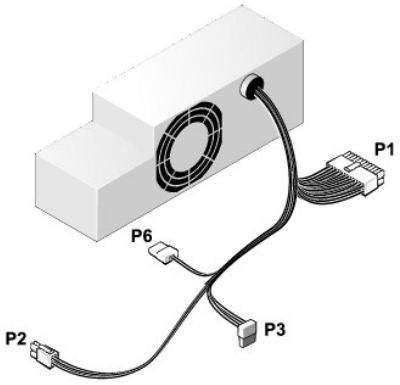
7. Slide the power supply toward the front of the computer (approximately 1 inch).
8. Lift the power supply up and out of the computer.
9. Slide the replacement power supply into place.
10. Replace the screws that secure the power supply to the back of the computer chassis.
11. Reconnect the DC power cables to the system board and drives (see System Board Components for connector locations).

12. Replace the floppy drive or media card reader (see Installing a Floppy Drive).
13. Replace the optical drive (see Installing an Optical Drive).
14. Replace the computer cover (see Replacing the Computer Cover).
15. Connect the AC power cable to the power supply AC power connector.

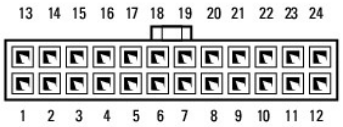
△ **CAUTION: To connect a network cable, plug the cable into the network wall jack and then plug it into the computer.**

16. Connect your computer and devices to electrical outlets, and turn them on.

DC Power Connectors



DC Power Connector P1



Pin Number	Signal Name	18-AWG Wire
1	COM	Black
2	FAN	Brown
3	N/C	N/C
4	+3.3 VDC	Orange
5	COM	Black
6	COM	Black
7	+12 VDC	Yellow
8	+5 VSB	Purple
9	COM	Black
10	+5 VDC	Red
11	+5 VDC	Red
12	+5 VDC	Red
13	COM	Black
14	COM	Black
15	+3.3 VDC	Orange
16	+3.3 VDC	Orange
17	POK	Gray
18	COM	Black

19	+12 VDC	Yellow
20	-12 VDC	Blue
21	COM	Black
22	PS_ON	Green
23	+5 VDC	Red
24	+5 VDC	Red

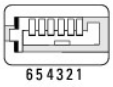
DC Power Connector P2

Pin Number	Signal Name	18-AWG Wire
1	GND	Black
2	GND	Black
3	+12 VDC	Yellow
4	+12 VDC	Yellow

DC Power Connectors P3

Pin Number	Signal Name	18-AWG Wire
1	+3.3 VDC	Orange
2	GND	Black
3	+5 VDC	Red
4	GND	Black
5	+12 VDC	Yellow

DC Power Connector P6



Pin Number	Signal Name	24-AWG Wire
1	NC	NC
2	+5 VDC	Red
3	+5 VDC	Red
4	NC	NC
5	GND	Black
6	GND	Black

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Dell™ OptiPlex™ 760 Service Manual

- Speakers

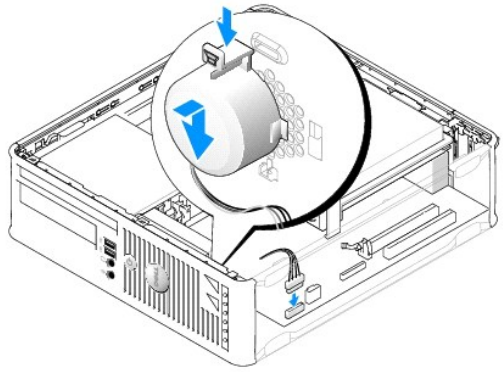
Speakers

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Installing a Speaker

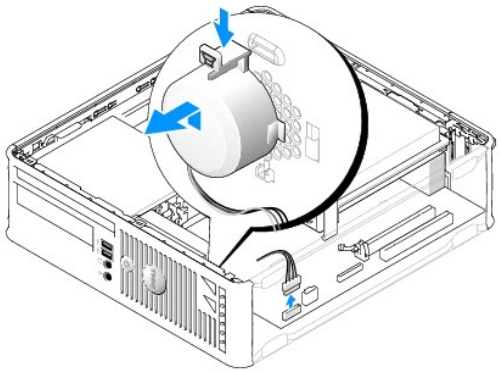
1. Follow the procedures in Working on Your Computer.
2. Remove the cover of your computer (see Removing the Computer Cover).
3. Insert the speaker into the chassis of the computer.



4. Connect the cables to the system board.
5. Replace the computer cover.
6. Turn on power to the computer.

Removing a Speaker

1. Follow the procedures in Working on Your Computer.
2. Remove the cover of your computer (see Removing the Computer Cover).
3. Disconnect the cables from the system board.
4. Remove the speaker from the chassis of the computer.



5. Replace the computer cover.
6. Turn on power to the computer.

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Small Form Factor

Dell™ OptiPlex™ 760 Service Manual

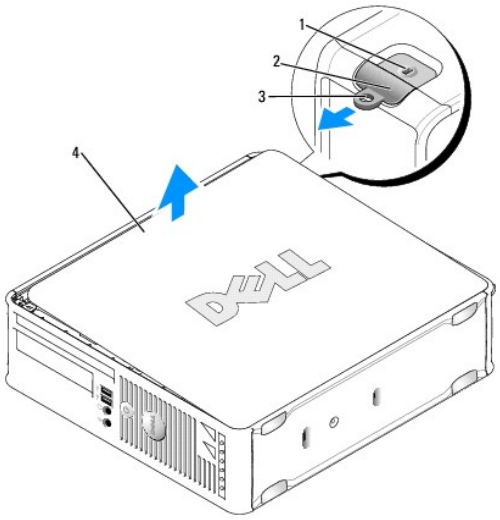
- Removing the Computer Cover
- Inside Your Computer
- System Board Components

Removing the Computer Cover

⚠ **WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.**

⚠ **WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.**

1. Follow the procedures in Working on Your Computer.
2. If you have installed a padlock through the padlock ring on the back panel, remove the padlock.
3. Slide the release latch back as you lift the cover.



1	security cable slot	2	cover release latch
3	padlock ring	4	computer cover

4. Pivot the cover up using the bottom hinges as leverage points.
5. Remove the cover from the hinge tabs and set it aside on a soft nonabrasive surface.

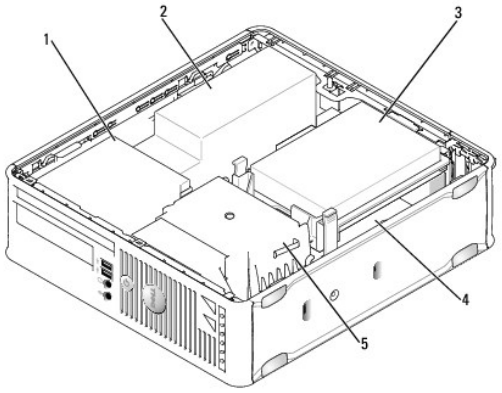
⚠ **WARNING: Graphics card heat sinks can become very hot during normal operation. Ensure that a graphics card heat sink has had sufficient time to cool before you touch it.**

Inside Your Computer

⚠ **WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.**

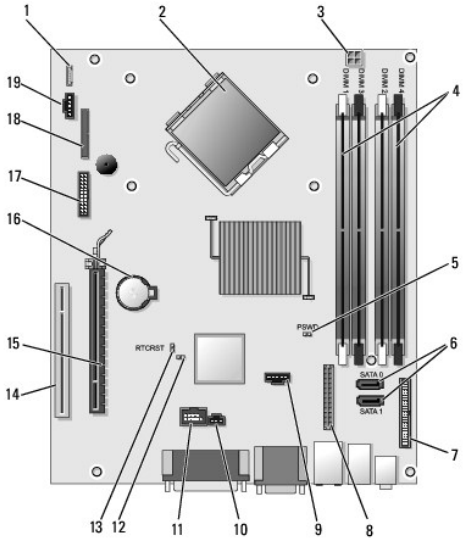
⚠ **WARNING: To avoid electrical shock, always unplug your computer from the electrical outlet before removing the computer cover.**

CAUTION: **Be careful when opening the computer cover to ensure that you do not accidentally disconnect cables from the system board.**



1	drives (CD/DVD, floppy, and media card reader)	2	power supply
3	hard drive	4	system board
5	heat sink assembly		

System Board Components



1	internal speaker connector (INT_SPKR)	2	processor connector (CPU)
3	processor power connector (12VPOWER)	4	memory module connectors (DIMM_1, DIMM_2, DIMM_3, DIMM_4)
5	password jumper (PSWD)	6	SATA connectors (SATA0 and SATA1)
7	front-panel connector (FRONTPANEL)	8	power connector (MICRO_PWR)
9	fan connector (FAN_HDD)	10	intrusion switch connector (INTRUDER)
11	internal USB connector (INT_USB)	12	service mode disable jumper
13	RTC reset jumper (RTCRST)	14	PCI connector (SLOT2)
15	PCI Express x16 connector (SLOT1)	16	battery socket (BATTERY)
17	PS/2 or serial connector (SERIAL2)	18	floppy drive connector (DSKT2)

19	fan connector (FAN_CPU)		

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Small Form Factor Computer

About Your Computer
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Removing and Replacing Parts
Working on Your Computer
Removing the Computer Cover
Chassis Intrusion Switch
Cards
Drives
Heat Sink and Processor
System Fan
I/O Panel
Power Supply
Speakers
Memory
Battery
Replacing the System Board
Replacing the Computer Cover

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Models: DCTR, DCNE, DCSM, and DCCY

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System Board

Dell™ OptiPlex™ 760 Service Manual

- Removing the System Board
- Replacing the System Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the System Board

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover.

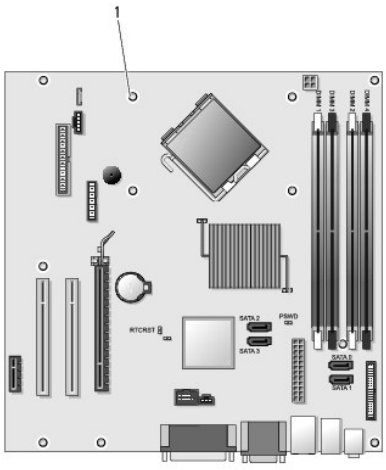
CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate any static electricity that could harm internal components.

3. Remove any components that restrict access to the system board (optical drive[s], floppy drive, hard drive, hard-drive bracket, I/O panel (as applicable).

   NOTE: If you are using an ultra small form factor computer, you must remove the system board sled and fan (see Removing the System Fans).

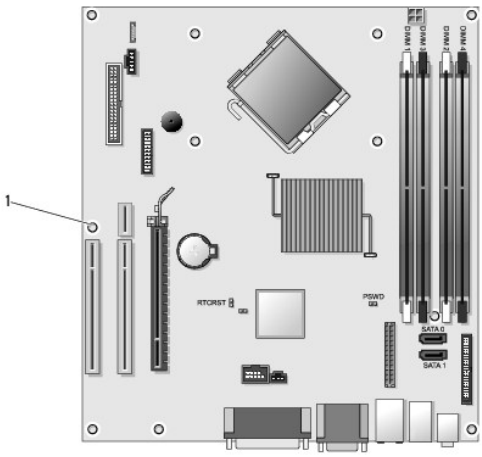
4. Remove the processor and heat sink assembly:
   - Mini tower: see Heat Sink and Processor
   - Desktop: see Processor
   - Small form factor: see Heat Sink and Processor
   - Ultra small form factor: see Heat Sink and Processor
5. Disconnect all cables from the system board.
6. Remove the screws from the system board.
   - Mini tower: see Mini Tower System Board Screws
   - Desktop: see Desktop System Board Screws
   - Small form factor: see Small Form Factor System Board Screws
   - Ultra small form factor: see Ultra Small Form Factor System Board Screws
7. Slide the system board assembly toward the front of the computer, and then lift the board up and away.
8. If you are replacing the system board, place the system board assembly that you just removed next to the replacement system board to ensure it is identical.

Mini Tower System Board Screws



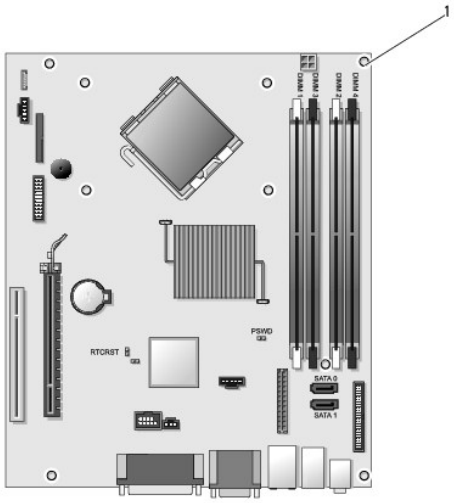
1	screws (9)

Desktop System Board Screws



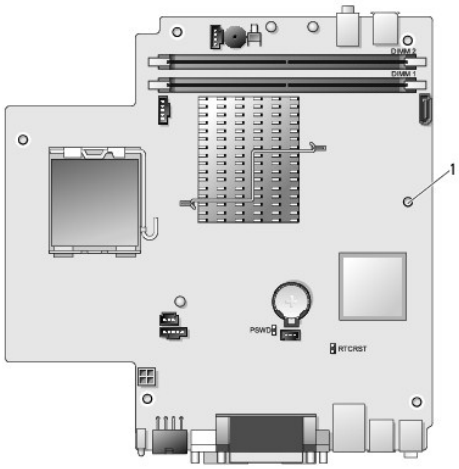
1	screws (9)

Small Form Factor System Board Screws



1	screws (9)

Ultra Small Form Factor System Board Screws



1	screws (10)

Replacing the System Board

NOTE: The system board is shipped in manufacturing mode. The user or service provider must select the manageability option upon first boot. See Manageability on how to select the manageability mode.

1. Gently align the board into the chassis and slide it toward the back of the computer.
2. Replace the screws on the system board.
3. Replace any components and cables that you removed from the system board.
4. Reconnect all cables to their connectors at the back of the computer.
5. Replace the computer cover (see Replacing the Computer Cover).

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System Setup

Dell™ OptiPlex™ 760 Service Manual

- Overview
- Entering System Setup
- System Setup Options
- Boot Sequence
- Booting to a USB Device
- Password Protection
- Jumper Settings
- Clearing Forgotten Passwords
- Clearing CMOS Settings
- Deploying Citrix® Provisioning Server (Dell) With Client Static IP Configuration

Overview

Use System Setup as follows:

- To change the system configuration information after you add, change, or remove any hardware in your computer
- To set or change a user-selectable option such as the user password
- To read the current amount of memory or set the type of hard drive installed

Before you use System Setup, it is recommended that you write down the System Setup screen information for future reference.

CAUTION: Unless you are an expert computer user, do not change the settings for this program. Certain changes can make your computer work incorrectly.

Entering System Setup

1. Turn on (or restart) your computer.
2. When the DELL™ logo is displayed, you must watch for the F12 prompt to appear.
3. Once the F12 prompt appears, press <F12> immediately. The **Boot Menu** appears.
4. Use the up and down arrow keys to select **System Setup** and then press <Enter>.

NOTE: The F12 prompt indicates that the keyboard has initialized. This prompt can appear very quickly, so you must watch for it to display, and then press <F12>. If you press <F12> before you are prompted, this keystroke will be lost.

5. If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then, shut down your computer and try again.

System Setup Screen

The System Setup screen displays current or changeable configuration information for your computer. Information on the screen is divided into two areas: the menu, and the main window.

Options List — This field appears on the left side of the system setup window. The field is a scrollable list containing features that define the configuration of your computer, including installed hardware, power conservation, and security features.	Option Field — This field contains information about each option. In this field you can view your current settings and make changes to your settings. Use the Tab and Up/Down arrow keys on your keyboard to navigate or click to navigate using the mouse.

System Setup Options

NOTE: Depending on your computer and installed devices, the items listed in this section may not appear, or may not appear exactly as listed.

WARNING: eSATA is designed to function only if the SATA Operation mode in system Setup (BIOS) is set to either IRRT or AHCI. If it is set to ATA, the eSATA functionality is lost though the connector can still be used as a USB port.

General	
System Board	Displays the following information: • System information: Displays **BIOS Info**, **System Info,** and the **Service Tag.** • Memory information: Displays **Installed Memory**, **Usable Memory, Memory Speed, Memory Channel Mode,** and **Memory Technology.** • Processor information: Displays the **Processor Type, Processor Speed, Processor Bus Speed, Processor L2 cache, Processor ID.** • PCI information: Displays available slots on the system board.
Date/Time	Displays the system date and time. Changes to the system date and time take effect immediately.
Boot Sequence	Specifies the order in which the computer attempts to find an operating system from the devices specified in this list.

Drives	
Diskette drive	Identifies and defines the floppy drive attached to the FLOPPY connector on the system board as: • **Disable** • **USB** • **Internal** (default) • **Read Only**
SATA Operation	Configures the operating mode of the integrated hard drive controller to: • **AHCI** (default) • **ATA** • **Legacy**
S.M.A.R.T. Reporting	Enables or disables integrated drive errors to be reported during system startup. This option is disabled by default.
Drives	Enables or disables the SATA or ATA drives connected to the system board.

System Configuration	
Integrated NIC	Enables or disables the integrated network card. You can set the integrated NIC to: • **Enable** (default) • **Disable** • **Enable with PXE** • **Enable with ImageSever**
USB Controller	Enables or disables the integrated USB controller. You can set the USB controller to: • **Enable** (default) • **Disable** • **No boot**
Parallel Port	Identifies and defines the parallel port settings. You can set the parallel port to: • **Disable** • **AT** • **PS/2 (default)** • **EPP** • **ECP No DMA** • **ECP DMA 1** • **ECP DMA 3**
Parallel Port Address	Sets the base I/O address of the integrated parallel port.
Serial Port #1	Identifies and defines the serial port settings. You can set the serial port to: • **Disable** • **Auto** (default) • **COM1** • **COM3** **NOTE:** Auto, the default setting, automatically configures a connector to a particular designation (COM1 or COM3).
Miscellaneous Devices	Enables or disables the following onboard devices: • **Front USB** • **Rear Dual USB** • **Rear Quad USB** • **PCI slots** • **Audio**

Video	
Primary Video	Specifies which video controller is primary when two video controllers are present on the computer. • **Auto** (default) • **Onboard/PEG**

Performance	
Multi Core Support	Specifies whether one or all the cores of the processor will be enabled. **NOTE:** The performance of some applications improve with additional cores.
Intel® SpeedStep™	Enables or disables the Intel SpeedStep mode. This option is disabled by default.
Limit CPUID Value	Enables or disables the CPUID limit. This option is disabled by default.
HDD Acoustic Mode	Sets the performance speed and noise level of your hard drive to: • **Bypass** (default) • **Quiet** • **Suggested** • **Performance**

Virtulization Support	
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel Virtulization technology for direct I/O.

Security	
Administrative Password	Provides restricted access to the computer's system setup program in the same way that access to the system can be restricted with the **System Password** option. This option is not set by default.
System Password	Displays the current status of the system's password security feature and allows a new system password to be assigned and verified. This option is not set by default.
Password Changes	Enables or disables the user from changing the system password without the administrative password. This option is enabled by default.
TPM Security	Enables or disables the trusted platform module (TPM) security. You can set the TPM security to: • **Deactivate** (default) • **Activate** • **Clear** **NOTE:** When TPM Security is set to **Clear** the system setup program clears the user information stored in the TPM.
CPU XD Support	Enables or disables the execute disable mode of the processor. This option is enabled by default.
Computrace(R)	Enables or disables the optional Computrace® service designed for asset management. You can set this option to: • **Deactivate** (default) • **Disable** • **Activate**
SATA-0 Password	Displays the current status of the password set for the hard drive connected to the SATA-0 connector on the system board. You can also set a new password. This option is not set by default. **NOTE:** The system setup program displays a password for each of the hard drives connected to your system board.

Power Management	

AC Recovery	Determines how the system responds when AC power is re-applied after a power loss. You can set the AC Recovery to: • **Power Off** (default) • **Power On** • **Last State**
Auto On Time	Sets time to automatically turn on the computer. Time is kept in the standard 12-hour format (hours:minutes:seconds). Change the startup time by typing the values in the time and AM/PM fields. **NOTE:** This feature does not work if you turn off your computer using the switch on a power strip or surge protector or if **Auto Power On** is set to **disabled**.
Low Power Mode	Enables or disables low power mode. This option is disabled by default. **NOTE:** When low power mode is enabled, the integrated network card is disabled.
Remote Wakeup	Allows the system to power up when a network interface controller receives a wake up signal**. You can set Remote Wakeup to:** • **Disable** (default) • **Enable** • **Enable with Boot NIC**
Suspend Mode	Sets the power management suspend mode to: • **S1** • **S3** (default)
Fan Control Override	Controls the speed of the system fan. **NOTE:** When enabled, the fan runs at full speed.

Maintenance	
Service Tag	Displays the Service Tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
SERR Messages	Controls the SERR Message mechanism. This option is enabled by default. Some graphics cards require the SERR Message mechanism be disabled.

Image Server	
Lookup Method	Specifies how the ImageServer looksup the server address. • **Static IP** • **DNS** **NOTE:** You must set the **Integrated NIC** to **Enable with ImageServer** to set the **Lookup Method**.
ImageServer IP	Specifies the primary static IP address of the ImageServer with which the client software communicates. The default IP address is **255.255.255.255** **NOTE:** You must set the **Integrated NIC** to **Enable with ImageServer** to set the **ImageServer IP**.
ImageServer Port	Specifies the primary IP port of the image server with which the client software communicates. The default IP port is **06910**.
Client DHCP	Specifies how the client obtains the IP address. • **Static IP** • **DHCP** (default)
Client IP	Specifies the static IP address of the client. The default IP address is **255.255.255.255**

	NOTE: To set **Client IP** you must set **Client DHCP** to **Static IP**
Client SubnetMask	Specifies the subnet mask for the client. The default setting is **255.255.255.255** **NOTE:** To set **Client SubnetMask** you must set **Client DHCP** to **Static IP**
Client Gateway	Specifies the gateway IP address for the client. The default setting is **255.255.255.255** **NOTE:** To set **Client SubnetMask** you must set **Client DHCP** to **Static IP**
License Status	Displays the current license status.

Post Behavior	
Fast Boot	When enabled (default), your computer starts more quickly because it skips certain configurations and tests.
NumLock LED	Enables or disables the NumLock feature when your computer starts. When enabled (default), this option activates the numeric and mathematical features shown at the top of each key. When disabled, this option activates the cursor-control functions labeled on the bottom of each key
POST Hotkeys	Allows you to specify the function keys to display on the screen when the computer starts. • **Enable F2 = Setup** (enabled by default) • **Enable F12 = Boot menu** (enabled by default)
Keyboard Errors	Enables or disables keyboard error reporting when the computer starts. This option is enabled by default.

System Logs	
BIOS Events	Displays the system event log and allows you to: • **Clear Log** • **Mark all Entries**

Boot Sequence

This feature allows you to change the Boot Device Property for devices.

Option Settings

- **Onboard USB Floppy Drive —** The computer attempts to boot from the floppy drive.
- **Onboard SATA Hard Drive —** The computer attempts to boot from the hard drive.
- **USB Device** — The computer attempts to boot from a removable device, such as a USB key.
- **CD/DVD** — The computer attempts to boot from the disc drive.

Changing the Boot Sequence for the Current Boot

You can use this feature, for example, to restart your computer to a USB device, such as a floppy drive, memory key, or optical drive.

1. If you are booting to a USB device, connect the USB device to a USB connector.
2. Turn on (or restart) your computer.
3. When F12 = Boot Menu appears in the upper-right corner of the screen, press <F12>.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop, then shut down your computer and try again.
4. The **Boot Menu** appears, listing all available boot devices.

5. Use the arrow keys to select the appropriate device (for the current boot only).

NOTE: To boot to a USB device, the device must be bootable. To ensure that a device is bootable, check the device documentation.

Changing the Boot Sequence for Future Boots

1. Enter System Setup (see Entering System Setup).
2. Click to expand **SystemBoard** and then click **Boot Sequence**.
3. Highlight the appropriate device from the list of devices on the right and then click the up or down arrows to move the item you want to change.
4. Click **Apply** to save the changes and then click **Exit** to exit System Setup and resume the boot process.

Booting to a USB Device

NOTE: To boot to a USB device, the device must be bootable. To ensure that your device is bootable, check the device documentation.

Memory Key

1. Insert the memory key into a USB port and restart the computer.
2. When F12 = Boot Menu appears in the upper-right corner of the screen, press <F12>.

   The BIOS detects the device and adds the USB device option to the boot menu.
3. From the boot menu, select the number that appears next to the USB device.

   The computer boots to the USB device.

Floppy Drive

1. In system setup, set the **Diskette Drive** option to **USB**.
2. Save and exit system setup.
3. Connect the USB floppy drive, insert a bootable floppy, and re-boot the computer.

Password Protection

CAUTION: Although passwords provide security for the data on your computer, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs.

System Password

CAUTION: If you leave your computer running and unattended without having a system password assigned, or if you leave your computer unlocked so that someone can disable the password by changing a jumper setting, anyone can access the data stored on your hard drive.

Option Settings

You cannot change or enter a new system password if either of the following two options is displayed:

- **Set** — A system password is assigned.
- **Disabled —** The system password is disabled by a jumper setting on the system board.

You can only assign a system password when the following option is displayed:

- **Not Set** — No system password is assigned and the password jumper on the system board is in the enabled position (the default setting).

Assigning a System Password

To exit without assigning a system password, press <Esc> at any time (before you press the **OK** button in step 4).

1. Enter system setup (see Entering System Setup).
2. Select **System Password**, and verify that **Password Status** is set to **Not Set**.
3. Type your new system password.

   You can use up to 32 characters. To erase a character when entering your password, press <Backspace>. The password is case sensitive.

   Certain key combinations are not valid. If you enter one of these invalid combinations, the speaker emits a beep.

   As you press each character key (or the spacebar for a blank space), a placeholder appears.
4. Type your new password a second time to confirm and press **OK** button.

   The password setting changes to **Set**.

Typing Your System Password

When you start or restart your computer, the following prompt appears on the screen.

If **Password Status** is set to **Locked**:

```
Type the password and press <Enter>.
```

If you have assigned an administrator password, the computer accepts your administrator password as an alternate system password.

If you type a wrong or incomplete system password, the following message appears on the screen:

```
** Incorrect password. **
```

If you again type an incorrect or incomplete system password, the same message appears on the screen. The third and subsequent times you type an incorrect or incomplete system password, the computer displays the following message:

```
** Incorrect password. **
Number of unsuccessful password attempts: 3
System halted! Must power down.
```

Even after your computer is turned off and on, the previous message is displayed each time you type an incorrect or incomplete system password.

NOTE: You can use **Password Status** in conjunction with **System Password** and **Admin Password** to further protect your computer from unauthorized changes.

Deleting or Changing an Existing System Password

1. Enter system setup (see Entering System Setup).
2. Go to **Security**→ **System Password** and press <Enter>.
3. When prompted, type the system password.
4. Press <Enter> twice to clear the existing system password. The setting changes to **Not Set**.

   If **Not Set** is displayed, the system password is deleted. If **Not Set** is not displayed, press <Alt><b> to restart the computer, and then repeat steps 3 and 4.
5. To assign a new password, follow the procedure in Assigning a System Password.
6. Exit system setup.

Administrator Password

Option Settings

You cannot change or enter a new administrator password if either of the following two options is displayed:

- **Set** — An administrator password is assigned.
- **Disabled —** The administrator password is disabled by a jumper setting on the system board.

You can only assign an administrator password when the following option is displayed:

- **Not Set** — No administrator password is assigned and the password jumper on the system board is in the enabled position (the default setting).

Assigning an Administrator Password

The administrator **password** can be the same as the system password.

NOTE: If the two passwords are different, the administrator password can be used as an alternate system password. However, the system password cannot be used in place of the administrator password.

1. Enter system setup (see Entering System Setup) and verify that **Admin Password** is set to **Not Set.**
2. Select **Admin Password** and press <Enter>.
3. Type your new administrator password.

   You can use up to 32 characters. To erase a character when entering your password, press <Backspace>. The password is case sensitive.

   Certain key combinations are not valid. If you enter one of these invalid combinations, the speaker emits a beep.

   As you press each character key (or the spacebar for a blank space), a placeholder appears.
4. Type your new password a second time to confirm and press **OK** button. The password setting changes to **Set**.
5. Exit system setup.

   A change to **Admin Password** becomes effective immediately (no need to restart the computer).

Operating Your Computer With an Administrator Password Enabled

When you enter system setup, the **Admin Password** option is highlighted, prompting you to type the password.

If you do not type the correct password, the computer lets you view, but not modify, system setup options.

NOTE: You can use **Password Status** in conjunction with **Admin Password** to protect the system password from unauthorized changes.

Deleting or Changing an Existing Administrator Password

To change an existing administrator password, you must know the administrator password.

1. Enter system setup (see Entering System Setup).
2. Type the administrator password at the prompt.
3. Highlight **Admin Password** and press the left- or right-arrow key to delete the existing administrator password.

   The setting changes to **Not Set**.

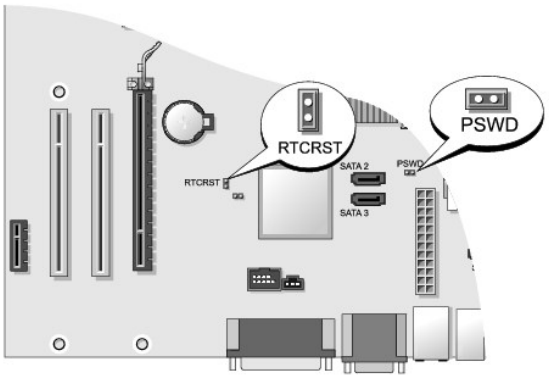
   To assign a new administrator password, perform the steps in Assigning an Administrator Password.
4. Exit system setup.

Disabling a Forgotten Password and Setting a New Password

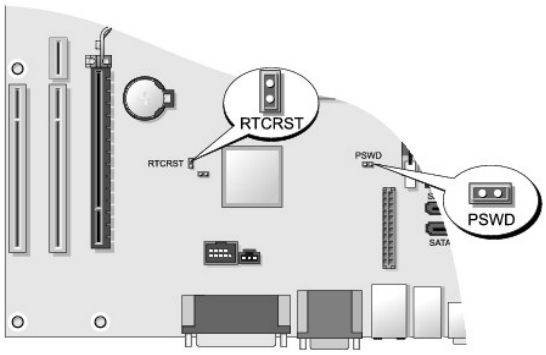
To reset system and/or administrator passwords, see Clearing Forgotten Passwords.

Jumper Settings

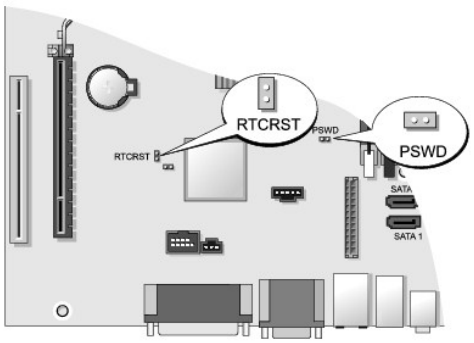
Mini Tower



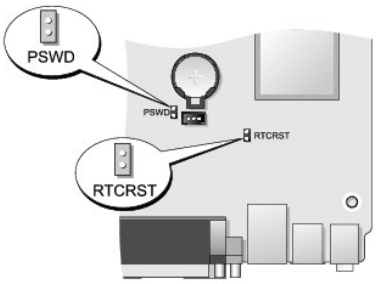
Desktop



Small Form Factor



Ultra Small Form Factor



Jumper	Setting	Description
PSWD		Password features are enabled (default setting).
		Password features are disabled.
RTCRST		The real-time clock has not been reset.
		The real-time clock is being reset (jumpered temporarily).
jumpered *unjumpered*		

Clearing Forgotten Passwords

⚠ **WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.**

△ **CAUTION: This process erases both the system and administrator passwords.**

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover.
3. Locate the 2-pin password jumper (PSWD) on the system board, and remove the jumper to clear the password. See Password Protection.
4. Replace the computer cover (see Replacing the Computer Cover).
5. Connect your computer and monitor to electrical outlets, and turn them on.
6. After the Microsoft® Windows® desktop appears on your computer, shut down your computer.
7. Turn off the monitor and disconnect it from the electrical outlet.
8. Disconnect the computer power cable from the electrical outlet, and press the power button to ground the system board.
9. Open the computer cover.
10. Locate the 2-pin password jumper on the system board and attach the jumper to reenable the password feature.
11. Replace the computer cover (see Replacing the Computer Cover).

△ **CAUTION: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.**

12. Connect your computer and devices to electrical outlets, and turn them on.

NOTE: This procedure enables the password feature. When you enter system setup (see Entering System Setup), both system and administrator password options appear as **Not Set**—meaning that the password feature is enabled but no password is assigned.

13. Assign a new system and/or administrator password.

Clearing CMOS Settings

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover.
3. Reset the current CMOS settings:
    a. Locate the password (PSWD) and CMOS (RTCRST) jumpers on the system board (see Password Protection).
    b. Remove the password jumper plug from its pins.
    c. Place the password jumper plug on the RTCRST pins and wait approximately 5 seconds.
    d. Remove the jumper plug from the RTCRST pins and place it back on the password pins.
4. Replace the computer cover (see Replacing the Computer Cover).

CAUTION: To connect a network cable, first plug the cable into the network wall jack and then plug it into the computer.

5. Connect your computer and devices to electrical outlets, and turn them on.

Deploying Citrix® Provisioning Server (Dell) With Client Static IP Configuration

In a secure environment where no DHCP service exists to assign IP addresses to clients and allow the clients to boot to the Provisioning Server, manually program static IP addresses for those clients in the system BIOS:

1. During boot, press <F2> to open System Setup.
2. Select **ImageSever** from the list of boot options.
3. Set **Client DHCP** to **Static IP.**
4. Select **Accept** in the window that opens asking you to confirm changing the Client DHCP option.
5. Set the **Client IP** with your desired IP address. The default is 255.255.255.255.
6. Set the **Client Subnet Mask** to the address assigned to the client. The default address is 255.255.255.255.
7. Set the **Client Gateway** to the gateway address assigned to the client. The default address is 255.255.255.255.
8. Change the **Lookup Method** to **Static IP**.
9. Set the **ImageServer IP** with the primary Provisioning Server IP address. The default address is 255.255.255.255.
10. Save the settings and reboot the system.

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Dell™ OptiPlex™ 760 Service Manual

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Troubleshooting

Dell™ OptiPlex™ 760 Service Manual

- Tools
- Dell Diagnostics
- Solving Problems
- Dell Technical Update Service

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

WARNING: Always unplug your computer from the electrical outlet before opening the cover.

Tools

Power Lights

The power button light located on the front of the computer illuminates and blinks or remains solid to indicate different states:

- If the power light is green and the computer is not responding, see Diagnostic Lights.
- If the power light is blinking green, the computer is in standby mode. Press a key on the keyboard, move the mouse, or press the power button to resume normal operation.
- If the power light is off, the computer is either turned off or is not receiving power.
  - Reseat the power cable into both the power connector on the back of the computer and the electrical outlet.
  - If the computer is plugged into a power strip, ensure that the power strip is plugged into an electrical outlet and that the power strip is turned on.
  - Bypass power protection devices, power strips, and power extension cables to verify that the computer turns on properly.
  - Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
  - Ensure that the main power cable and front panel cable are securely connected to the system board. See the following:
    - Mini Tower — System Board Components
    - Desktop — System Board Components
    - Small Form Factor — System Board Components
    - Ultra Small Form Factor — System Board Components
- If the power light is blinking amber, the computer is receiving electrical power, but an internal power problem may exist.
  - Ensure that the voltage selection switch is set to match the AC power at your location, if applicable.
  - Ensure that the processor power cable is securely connected to the system board. See the following:
    - Mini Tower — System Board Components
    - Desktop — System Board Components
    - Small Form Factor — System Board Components
    - Ultra Small Form Factor — System Board Components
- If the power light is steady amber, a device may be malfunctioning or incorrectly installed.
  - Remove and then reinstall the memory modules (see Memory).
  - Remove and then reinstall any cards. See the following:
    - Mini Tower — Cards
    - Desktop — Cards
    - Small Form Factor — Cards
- Eliminate interference. Some possible causes of interference are:
  - Power, keyboard, and mouse extension cables
  - Too many devices on a power strip
  - Multiple power strips connected to the same electrical outlet

Diagnostic Lights

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

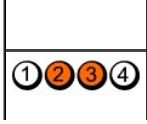
To help troubleshoot a problem, your computer has four lights labeled *1*, *2*, *3*, and *4* on the front panel.

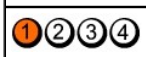
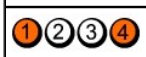
NOTE: If you are using an ultra form factor computer, the diagnostic lights are present on the back panel. See the *Setup and Quick Reference Guide* that ships with your computer for more information.

When the computer starts normally, the lights flash, and then turn off. If the computer malfunctions, use the sequence of the lights to help identify the problem.

NOTE: After the computer completes POST, all four lights turn off before booting to the operating system.

Diagnostic Light Codes During POST

Light Pattern	Problem Description	Suggested Resolution
Off	The computer is either turned off or not receiving power.	• Reseat the power cable in the power connector on the back of the computer and the electrical outlet. • Bypass power strips, power extension cables, and other power protection devices to verify that the computer turns on properly. • Ensure that any power strips being used are plugged into an electrical outlet and are turned on. • Ensure that the electrical outlet is working by testing it with another device, such as a lamp. • Ensure that the main power cable and front panel cable are securely connected to the system board.
Off	A possible motherboard failure has occurred.	• Unplug the computer. Allow a minute for the power to drain. Plug the computer into a working electrical outlet and press the power button. • If the problem persists, contact Dell (see Contacting Dell).
Blinking Amber	A possible motherboard, power supply, or peripheral failure has occurred.	• Power off computer, leaving the computer plugged in. Press and hold the power supply test button on the back of the power supply unit. If the power supply diagnostic light next to the switch illuminates, the problem may be with your system board. Contact Dell (see Contacting Dell). If the power supply diagnostic light next to the switch does not illuminate, disconnect all internal and external peripherals, and press and hold the power supply test button.If it illuminates, there could be a problem with a peripheral. Contact Dell (see Contacting Dell). • If the power supply diagnostic light still does not illuminate, disconnect the power supply from the system board, then press and hold the power supply button. If the light illuminates, there could be a problem with the system board. If the power supply diagnostic light still does not illuminate, the problem is probably with the power supply. Contact Dell (see Contacting Dell).
Steady Amber	No CPU present.	• Reinstall the processor and restart the system. If the computer still fails to boot, inspect the processor socket for damage. • If the problem persists, contact Dell (see Contacting Dell).
Steady Amber	Memory modules are detected, but a memory power failure has occurred.	• If two or more memory modules are installed, remove the modules, then reinstall one module and restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error. If only one memory module is installed, try moving it to a different DIMM connector and restart the computer. • If available, install verified working memory of the same type into your computer. • If the problem persists, contact Dell (see Contacting Dell).
	A possible CPU or motherboard failure has occurred.	• Replace the processor with a known good processor. If the computer still fails to boot, inspect the processor socket for damage. • If the problem persists, contact Dell (see Contacting Dell).

 Steady Amber		
   Steady Amber	BIOS may be corrupt or missing.	• The computer hardware is operating normally but the BIOS may be corrupt or missing. Contact Dell (see Contacting Dell).
 **Steady Amber**	A possible motherboard failure has occurred.	• Remove all cards from the PCI and PCI-E slots and restart the computer. If the computer boots, add the cards back one by one until you find the bad one. • If the problem persists, the system board may be faulty. Contact Dell (see Contacting Dell).
 **Steady Amber**	Power connector not installed properly.	• Reseat the 2x2 power connector from the power supply unit. • If the computer still fails to boot, contact Dell (see Contacting Dell).
   Steady Amber	Possible peripheral card or motherboard failure has occurred.	• Remove all cards from the PCI and PCI-E slots and restart the computer. If the computer boots, add the cards back one by one until you find the faulty one. • If the problem persists, the system board is probably bad. Contact Dell (see Contacting Dell).
   Steady Amber	A possible motherboard failure has occurred.	• Disconnect all internal and external peripherals, and restart the computer. If the computer boots, add the peripheral back one by one until you find the faulty one. Contacting Dell. • If the problem persists, the system board is probably bad. Contact Dell (see Contacting Dell).
   Steady Amber	A possible coin cell battery failure has occurred.	• Remove the coin cell battery for one minute, reinstall the battery, and restart. • If the problem persists, contact Dell (see Contacting Dell).
   Steady Green	The computer is in a normal *on* condition. The diagnostic lights are not lit after the computer successfully boots to the operating system.	• Ensure that the display is connected and powered on. • If the problem persists, contact Dell (see Contacting Dell).
   Steady Green	A possible processor failure has occurred.	• Reseat the processor (see Processor information for your computer). • If the problem persists, contact Dell (see Contacting Dell).
 	Memory modules are detected, but a memory failure has occurred.	• If two or more memory modules are installed, remove the modules and then reinstall one module (see Memory). Restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error.

Steady Green		• If available, install working memory of the same type into your computer (see Memory). • If the problem persists, contact Dell (see Contacting Dell).
 Steady Green	A possible graphics card failure has occurred.	• Reseat any installed graphics cards (see the "Cards" section for your computer). • If available, install a working graphics card into your computer. • If the problem persists, contact Dell (see Contacting Dell).
 Steady Green	A possible floppy drive or hard drive failure has occurred.	Reseat all power and data cables.
 Steady Green	A possible USB failure has occurred.	Reinstall all USB devices and check all cable connections.
 Steady Green	No memory modules are detected.	• If two or more memory modules are installed, remove the modules (see Removing Memory Module (s)), then reinstall one module (see Installing Memory Module (s)) and restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error. • If available, install working memory of the same type into your computer (see Memory). • If the problem persists, contact Dell (see Contacting Dell).
 Steady Green	Memory modules are detected, but a memory configuration or compatibility error has occurred.	• Ensure that no special requirements for memory module/connector placement exist. • Ensure that the memory you are using is supported by your computer (see the *Setup and Quick Reference Guide* that ships with your computer). • If the problem persists, contact Dell (see Contacting Dell).
 Steady Green	A possible expansion card failure has occurred.	• Determine if a conflict exists by removing an expansion card (not a graphics card) and restarting the computer (see the "Cards" section for your computer). • If the problem persists, reinstall the card you removed, then remove a different card and restart the computer. • Repeat this process for each expansion card installed. If the computer starts normally, troubleshoot the last card removed from the computer for resource conflicts. • If the problem persists, contact Dell (see Contacting Dell).
 Steady Green	Another failure has occurred.	• Ensure that all hard drive and optical drive cables are properly connected to the system board (see the "System Board Components" section for your computer). • If there is an error message on the screen identifying a problem with a device (such as the floppy drive or hard drive), check the device to make sure it is functioning properly. • If the operating system is attempting to boot from a device (such as the floppy drive or optical drive), check system setup to ensure the boot sequence is correct for the devices installed on your computer. • If the problem persists, contact Dell (see Contacting Dell).
 Blinking Green	The computer is in standby mode.	Press a key on the keyboard, move the mouse, or press the power button to resume normal operation.

Power Supply Diagnostic Light

The power supply diagnostic light located on the back of the computer, near the power connector. The light remains solid or off to indicate different states:

- No light — Indicates no power available for the power supply or the power supply is not working.
- Green light — Indicates power availability for the power supply.

Beep Codes

Your computer may emit a series of beeps during start-up if the monitor cannot display errors or problems. For example, one possible beep code may consist of three short, repeated beeps indicating that the computer has encountered a possible system board failure.

If your computer emits a series of beeps during start-up:

1. Write down the beep code.
2. Run the Dell Diagnostics to further identify the problem. (see Dell Diagnostics).

Code	Cause
2 short, 1 long	BIOS checksum error
1 long, 3 short, 2 short	Memory error
1 short	F12 key pressed

Code (repetitive short beeps)	Description	Suggested Resolution
1	BIOS checksum failure. Possible system board failure.	Contact Dell (see Contacting Dell).
2	No memory modules are detected.	• If two or more memory modules are installed, remove the modules, then reinstall one module and restart the computer. If the computer starts normally, continue to install additional memory modules (one at a time) until you have identified a faulty module or reinstalled all modules without error. See Memory. • If available, install working memory of the same type into your computer. See Memory. • If the problem persists, contact Dell (see Contacting Dell).
3	Possible system board failure.	Contact Dell (see Contacting Dell).
4	RAM Read/Write failure.	• Ensure that no special requirements for memory module/connector placement exist. See Memory. • Ensure that the memory you are using is supported by your computer. See Memory. • If the problem persists, contact Dell (see Contacting Dell).
5	Real time clock failure. Possible battery or system board failure.	• Replace the battery. See Replacing the Battery. • If the problem persists, contact Dell (see Contacting Dell).
6	Video BIOS Test Failure.	Contact Dell (see Contacting Dell).

System Messages

NOTE: If the message you received is not listed in the table, see the documentation for either the operating system or the program that was running when the message appeared.

Alert! Previous attempts at booting this system have failed at checkpoint [nnnn]. For help in resolving this problem, please note this checkpoint and contact Dell Technical Support — The computer failed to complete the boot routine three consecutive times for the same error (see Contacting Dell for assistance).

CMOS checksum error — Possible system board failure or RTC battery low. Replace the battery (see Battery or see Contacting Dell for assistance).

CPU fan failure — CPU fan failure. Replace the CPU fan. See the following:

- Mini Tower — Heat Sink and Processor
- Desktop — Heat Sink Assembly
- Small Form Factor — Heat Sink and Processor
- Ultra Small Form Factor — Heat Sink and Processor

Floppy diskette seek failure — A cable may be loose, or the computer configuration information may not match the hardware configuration. Check cable connections (see Contacting Dell for assistance).

Diskette read failure — The floppy disk may be defective or a cable may be loose. Replace the floppy disk or check for a loose cable connection.

Hard-disk read failure — Possible hard drive failure during hard-drive boot test (see Contacting Dell for assistance).

Keyboard failure —

Keyboard failure or keyboard cable loose (see Keyboard Problems).

No boot device available — The system cannot detect a bootable device or partition.

- If the floppy drive is your boot device, ensure that the cables are connected and that a bootable floppy disk is in the drive.
- If the hard drive is your boot device, ensure that the cables are connected and that the drive is installed properly and partitioned as a boot device.
- Enter System Setup and ensure that the boot sequence information is correct (see System Setup).

No timer tick interrupt — A chip on the system board might be malfunctioning or motherboard failure (see Contacting Dell for assistance).

Non-system disk or disk error — Replace the floppy disk with one that has a bootable operating system or remove the floppy disk and restart the computer.

Not a boot diskette — Insert a bootable floppy disk and restart your computer.

NOTICE – Hard Drive SELF MONITORING SYSTEM has reported that a parameter has exceeded its normal operating range. Dell recommends that you back up your data regularly. A parameter out of range may or may not indicate a potential hard drive problem. —

S.M.A.R.T error, possible HDD failure. This feature can be enabled or disabled in the system setup.

Hardware Troubleshooter

If a device is either not detected during the operating system setup or is detected, but incorrectly configured, you can use the Hardware Troubleshooter to resolve the incompatibility.

Windows XP:

1. Click **Start**→ **Help and Support**.
2. Type hardware troubleshooter in the search field and press <Enter> to start the search.
3. In the **Fix a Problem** section, click **Hardware Troubleshooter**.
4. In the **Hardware Troubleshooter** list, select the option that best describes the problem and click **Next** to follow the remaining troubleshooting steps.

Windows Vista:

1. Click the Windows Vista start button , and click **Help and Support.**
2. Type hardware troubleshooter in the search field and press <Enter> to start the search.
3. In the search results, select the option that best describes the problem and follow the remaining troubleshooting steps.

Dell Diagnostics

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

When to Use the Dell Diagnostics

If you experience a problem with your computer, perform the checks in Solving Problems, and then run the Dell Diagnostics before contacting Dell for assistance.

Start the Dell Diagnostics from your hard drive or from the *Drivers and Utilities* media provided with your computer.

NOTE: The *Drivers and Utilities* media is optional and may not ship with your computer.

NOTE: The Dell Diagnostics only operate on Dell computers.

Starting the Dell Diagnostics From Your Hard Drive

Before running the Dell Diagnostics, enter System Setup (see the Entering System Setup) to review your computer's configuration information, and ensure that the device you want to test is displayed in System Setup and is active.

The Dell Diagnostics is located on a separate diagnostic utility partition on your hard drive.

NOTE: If your computer does not display a screen image, contact Dell (see Contacting Dell).

1. Ensure that the computer is connected to an electrical outlet that is known to be working properly.
2. Turn on (or restart) your computer.
3. When the DELL logo appears, press <F12> immediately.

NOTE: Keyboard failure may result when a key is held down for extended periods of time. To avoid possible keyboard failure, press and release <F12> in even intervals to open the Boot Device Menu.

If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop, then shut down your computer and try again.

4. Use the up- and down-arrow keys to select **Diagnostics** from the boot menu and then press <Enter>.

NOTE: If you see a message stating that no diagnostics utility partition has been found, run the Dell Diagnostics from your *Drivers and Utilities* media (see Starting the Dell Diagnostics From the Drivers and Utilities Media).

5. Press any key to start the Dell Diagnostics from the diagnostics utility partition on your hard drive.
6. Press <Tab> to select **Test System** and then press <Enter>.

NOTE: It is recommended that you select **Test System** to run a complete test on your computer. Selecting **Test Memory** initiates the extended memory test, which can take up to thirty minutes or more to complete. When the test completes, record the test results and then press any key to return to the previous menu.

7. At the Dell Diagnostics Main Menu, left-click with the mouse, or press <Tab> and then <Enter>, to select the test you want to run (see Dell Diagnostics Main Menu).

NOTE: Write down any error codes and problem descriptions exactly as they appear and follow the instructions on the screen.

8. After all tests have completed, close the test window to return to the Dell Diagnostics Main Menu.
9. Close the Main Menu window to exit the Dell Diagnostics and restart the computer.

Starting the Dell Diagnostics From the Drivers and Utilities Media

Before running the Dell Diagnostics, enter System Setup (see Entering System Setup) to review your computer's configuration information, and ensure that the device you want to test is displayed in System Setup and is active.

1. Insert the *Drivers and Utilities* media into the optical drive.
2. Restart your computer.
3. When the DELL logo appears, press <F12> immediately.

NOTE: Keyboard failure may result when a key is held down for extended periods of time. To avoid possible keyboard failure, press and release <F12> in even intervals to open the **Boot Device Menu**.

If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop, then shut down your computer and try again.

4. When the boot device list appears, use the up- or down- arrow keys to highlight **CD / DVD / CD-RW Drive** then press <Enter>.

NOTE: Using the one-time boot menu changes the boot sequence for the current boot only. Upon restart, the computer boots according to the boot sequence specified in System Setup.

5. Press any key to confirm that you want to start from the CD/DVD.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop, then shut down your computer and try again.

6. Type 1 to **Run the 32 Bit Dell Diagnostics**.

7. At the **Dell Diagnostics Menu**, type 1 to select **Dell 32-bit Diagnostics for Resource CD (graphical user interface)**.

8. Press <Tab> to select **Test System** and then press <Enter>.

   NOTE: It is recommended that you select **Test System** to run a complete test on your computer. Selecting **Test Memory** initiates the extended memory test, which can take up to thirty minutes or more to complete. When the test completes, record the test results and then press any key to return to the previous menu.

9. At the Dell Diagnostics Main Menu, left-click with the mouse, or press <Tab> and then <Enter>, to select the test you want to run (see Dell Diagnostics Main Menu).

NOTE: Write down any error codes and problem descriptions exactly as they appear and follow the instructions on the screen.

10. After all tests have completed, close the test window to return to the Dell Diagnostics Main Menu.

11. Close the Main Menu window to exit the Dell Diagnostics and restart the computer.

12. Remove the *Drivers and Utilities* media from the optical drive.

Dell Diagnostics Main Menu

After the Dell Diagnostics loads the following menu appears:

Option	Function
Test Memory	Run the stand-alone memory test
Test System	Run system diagnostics
Exit	Exit the diagnostics

Press <Tab> to select the test you want to run and then press <Enter>.

NOTE: It is recommended that you select **Test System** to run a complete test on your computer. Selecting **Test Memory** initiates the extended memory test, which can take up to thirty minutes or more to complete. When the test completes, record the test results and then press any key to return to this menu.

After **Test System** is selected, the following menu appears:

Option	Function
Express Test	Performs a quick test of devices in the system. This typically can take 10 to 20 minutes. **NOTE:** The Express Test requires no interaction on your part. Run Express Test first to increase the possibility of tracing a problem quickly.
Extended Test	Performs a thorough check of devices in the system. This typically can take an hour or more. **NOTE:** The Extended Test periodically requires your input to answer specific questions.
Custom Test	Use to test a specific device or customize the tests to be run.
Symptom Tree	This option allows you to select tests based on a symptom of the problem you are having. This option lists the most common symptoms.

NOTE: It is recommended that you select **Extended Test** to perform a more thorough check of devices in the computer.

For any problem encountered during a test, a message appears with an error code and a description of the problem. Write down the error code and problem description exactly as it appears and follow the instructions on the screen. If you cannot resolve the problem, contact Dell (see Contacting Dell).

NOTE: When contacting Dell support, have your Service Tag ready. The Service Tag for your computer is located at the top of each test screen.

The following tabs provide additional information for tests run from the Custom Test or Symptom Tree option:

Tab	Function
Results	Displays the results of the test and any error conditions encountered.
Errors	Displays error conditions encountered, error codes, and the problem description.
Help	Describes the test and any requirements for running the test.
Configuration	Displays the hardware configuration for the selected device. The Dell Diagnostics obtains configuration information for all devices from System Setup, memory, and various internal tests, and displays the information in the device list in the left pane of the screen. **NOTE:** The device list may not display the names of all components installed on your computer or all devices attached to your computer.
Parameters	Allows you to customize the test, if applicable, by changing the test settings.

Solving Problems

Follow these tips when troubleshooting your computer:

- If you added or removed a part before the problem started, review the installation procedures and ensure that the part is correctly installed.
- If a peripheral device does not work, ensure that the device is properly connected.
- If an error message appears on the screen, write down the exact message. This message may help support personnel diagnose and fix the problem(s).
- If an error message occurs in a program, see the program's documentation.

NOTE: The procedures in this document were written for the Windows default view, so they may not apply if you set your Dell™ computer to the Windows Classic view.

Battery Problems

WARNING: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

Replace the battery —

If you have to repeatedly reset time and date information after turning on the computer, or if an incorrect time or date displays during start-up, replace the battery (see "Replacing the Battery" on page 157). If the battery still does not work properly, contact Dell (see Contacting Dell).

Drive Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

Ensure that Microsoft® Windows® Recognizes the drive —

Windows XP:

- Click **Start and click My Computer**.

Windows Vista™:

- Click the Windows Vista Start button and click **Computer**.

If the drive is not listed, perform a full scan with your antivirus software to check for and remove viruses. Viruses can sometimes prevent Windows from recognizing the drive.

Test the drive —

- Insert another disc to eliminate the possibility that the original drive is defective.
- Insert a bootable floppy disk and restart the computer.

Clean the drive or disk —

See the *Dell™ Technology Guide* for more information on cleaning your computer.

Check the cable connections

Run the Hardware Troubleshooter —

See Hardware Troubleshooter on page 83.

Run the Dell Diagnostics —

See Dell Diagnostics.

Optical drive problems

NOTE: High-speed optical drive vibration is normal and may cause noise, which does not indicate a defect in the drive or the media.

NOTE: Because of different regions worldwide and different disc formats, not all DVD titles work in all DVD drives.

Adjust the Windows volume control —

- Click the speaker icon in the lower-right corner of your screen.
- Ensure that the volume is turned up by clicking the sidebar and dragging it up.
- Ensure that the sound is not muted by clicking any boxes that are checked.

Check the speakers and subwoofer —

See Sound and Speaker Problems.

Problems writing to an optical drive

Close other programs —

The optical drive must receive a steady stream of data during the writing process. If the stream is interrupted, an error occurs. Try closing all programs before you write to the optical.

Turn off standby mode in Windows before writing to a disc —

Search for the keyword *standby* in Windows **Help and Support** for information on power management modes.

Hard drive problems

Run Check Disk —

Windows XP:

1. Click **Start and click My Computer**.
2. Right-click **Local Disk C:**.
3. Click **Properties→ Tools→ Check Now**.
4. Click **Scan for and attempt recovery of bad sectors and click Start**.

Windows Vista:

1. Click **Start** and click **Computer**.
2. Right-click **Local Disk C:**.
3. Click **Properties→ Tools→ Check Now**.

   The **User Account Control** window may appear. If you are an administrator on the computer, click **Continue**; otherwise, contact your administrator to continue the desired action.

4. Follow the instructions on the screen.

Error Messages

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

If the error message is not listed, see the documentation for the operating system or the program that was running when the message appeared.

A filename cannot contain any of the following characters: \ / : * ? " < > | — Do not use these characters in filenames.

A required .DLL file was not found — The program that you are trying to open is missing an essential file. To remove and then reinstall the program:

Windows XP:

1. Click **Start→ Control Panel→ Add or Remove Programs→ Programs and Features**.
2. Select the program you want to remove.
3. Click **Uninstall**.
4. See the program documentation for installation instructions.

Windows Vista:

1. Click **Start** → **Control Panel→ Programs→ Programs and Features**.
2. Select the program you want to remove.
3. Click **Uninstall**.
4. See the program documentation for installation instructions.

drive letter **:\ is not accessible. The device is not ready —** The drive cannot read the disk. Insert a disk into the drive and try again.

Insert bootable media — Insert a bootable floppy disk, CD, or DVD.

Non-system disk error — Remove the floppy disk from the floppy drive and restart your computer.

Not enough memory or resources. Close some programs and try again — Close all windows and open the program that you want to use. In some cases, you may have to restart your computer to restore computer resources. If so, run the program that you want to use first.

Operating system not found — Contact Dell (see Contacting Dell).

IEEE 1394 Device Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

NOTE: Your computer supports only IEEE 1394a standard.

Ensure that the cable for the IEEE 1394 device is properly inserted into the device and into the connector on the computer

Ensure that the IEEE 1394 device is enabled in system setup — See System Setup Options.

Ensure that the IEEE 1394 device is recognized by Windows —

Windows XP:

1. Click **Start and click Control Panel**.
2. Under **Pick a Category**, click **Performance and Maintenance→ System→ System Properties → Hardware→ Device Manager**.

Windows Vista:

1. Click **Start** → **Control Panel→ Hardware and Sound**.
2. Click **Device Manager.**

If your IEEE 1394 device is listed, Windows recognizes the device.

If you have problems with a Dell IEEE 1394 device —

Contact Dell (see Contacting Dell).

If you have problems with an IEEE 1394 device not provided by Dell — Contact the IEEE 1394 device manufacturer.

Keyboard Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

Check the keyboard cable —

- Ensure that the keyboard cable is firmly connected to the computer.
- Shut down the computer (see Before Working on Your Computer), reconnect the keyboard cable as shown on the setup diagram for your computer, and then restart the computer.
- Ensure that the cable is not damaged or frayed and check cable connectors for bent or broken pins. Straighten any bent pins.
- Remove any keyboard extension cables and connect the keyboard directly to the computer.

Test the keyboard — Connect a properly working keyboard to the computer, then try using the keyboard.

Run the Hardware Troubleshooter —

See Hardware Troubleshooter.

Lockups and Software Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

The computer does not start up

Check the diagnostic lights —

See Diagnostic Lights.

Ensure that the power cable is firmly connected to the computer and to the electrical outlet

The computer stops responding

CAUTION: You may lose data if you are unable to perform an operating system shutdown.

Turn the computer off — If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 8 to 10 seconds (until the computer turns off), and then restart your computer.

A program stops responding

End the program —

1. Press <Ctrl><Shift><Esc> simultaneously to access the Task Manager.
2. Click the **Applications** tab.
3. Click to select the program that is no longer responding.
4. Click **End Task**.

A program crashes repeatedly

NOTE: Most software includes installation instructions in its documentation or on a floppy disk, CD, or DVD.

Check the software documentation —

If necessary, uninstall and then reinstall the program.

A program is designed for an earlier Windows operating system

Run the Program Compatibility Wizard —

Windows XP:

The Program Compatibility Wizard configures a program so that it runs in an environment similar to non-XP operating system environments.

1. Click **Start**→ **All Programs**→ **Accessories**→ **Program Compatibility Wizard**→ **Next**.
2. Follow the instructions on the screen.

Windows Vista:

The Program Compatibility Wizard configures a program so that it runs in an environment similar to non-Windows Vista operating system environments.

1. Click **Start** → **Control Panel**→ **Programs**→ **Use an older program with this version of Windows.**
2. In the welcome screen, click **Next**.
3. Follow the instructions on the screen.

A solid blue screen appears

Turn the computer off — If you are unable to get a response by pressing a key on your keyboard or moving your mouse, press and hold the power button for at least 8 to 10 seconds (until the computer turns off), and then restart your computer.

Other software problems

Check the software documentation or contact the software manufacturer for troubleshooting information —

- Ensure that the program is compatible with the operating system installed on your computer.
- Ensure that your computer meets the minimum hardware requirements needed to run the software. See the software documentation for information.
- Ensure that the program is installed and configured properly.
- Verify that the device drivers do not conflict with the program.
- If necessary, uninstall and then reinstall the program.

Back up your files immediately

Use a virus-scanning program to check the hard drive, floppy disks, CDs, or DVDs

Save and close any open files or programs and shut down your computer through the Start menu

Memory Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

If you receive an insufficient memory message —

- Save and close any open files and exit any open programs you are not using to see if that resolves the problem.
- See the software documentation for minimum memory requirements. If necessary, install additional memory (see Installing Memory Module (s)).
- Reseat the memory modules (see Memory) to ensure that your computer is successfully communicating with the memory.
- Run the Dell Diagnostics (see Dell Diagnostics).

If you experience other memory problems —

- Reseat the memory modules (see Memory) to ensure that your computer is successfully communicating with the memory.
- Ensure that you are following the memory installation guidelines (see Installing Memory Module (s)).
- Ensure that the memory you are using is supported by your computer. For more information about the type of memory supported by your computer, see Memory.
- Run the Dell Diagnostics (see Dell Diagnostics).

Mouse Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

Check the mouse cable —

- Ensure that the cable is not damaged or frayed and check cable connectors for bent or broken pins. Straighten any bent pins.
- Remove any mouse extension cables, and connect the mouse directly to the computer.
- Verify that the mouse cable is connected as shown on the setup diagram for your computer.

Restart the computer —

1. Simultaneously press <Ctrl><Esc> to display the **Start** menu.
2. Press <u>, press the up- and down-arrow keys to highlight **Shut down** or **Turn Off**, and then press <Enter>.
3. After the computer turns off, reconnect the mouse cable as shown on the setup diagram.
4. Turn on the computer.

Test the mouse — Connect a properly working mouse to the computer, then try using the mouse.

Check the mouse settings —

Windows XP

1. Click **Start→ Control Panel→ Mouse**.
2. Adjust the settings as needed.

Windows Vista:

1. Click **Start** → **Control Panel→ Hardware and Sound→ Mouse**.
2. Adjust the settings as needed.

Reinstall the mouse driver

Run the Hardware Troubleshooter — See Hardware Troubleshooter.

Network Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

Check the network cable connector — Ensure that the network cable is firmly inserted into the network connector on the back of the computer and the network jack.

Check the network lights on the back of the computer — If the link integrity light is off, no network communication is occurring. Replace the network cable.

Restart the computer and log on to the network again

Check your network settings — Contact your network administrator or the person who set up your network to verify that your network settings are correct and that the network is functioning.

Run the Hardware Troubleshooter — See Hardware Troubleshooter.

Power Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

If the power light is blue and the computer is not responding — See Diagnostic Lights.

If the power light is blinking green — The computer is in standby mode. Press a key on the keyboard, move the mouse, or press the power button to resume normal operation.

If the power light is off — The computer is either turned off or is not receiving power.

- Reseat the power cable in the power connector on the back of the computer and the electrical outlet.
- Bypass power strips, power extension cables, and other power protection devices to verify that the computer turns on properly.
- Ensure that any power strips being used are plugged into an electrical outlet and are turned on.
- Ensure that the electrical outlet is working by testing it with another device, such as a lamp.
- Ensure that the main power cable and front panel cable are securely connected to the system board (see the "System Board Components" section for your computer).

If the power light is blinking amber — The computer is receiving electrical power, but an internal power problem may exist.

- Ensure that the voltage selection switch is set to match the AC power at your location (if applicable).
- Ensure that all components and cables are properly installed and securely connected to the system board (see the "System Board Components" section for your computer).

If the power light is steady amber — A device may be malfunctioning or incorrectly installed.

- Ensure that the processor power cable is securely connected to the system board power connector (POWER2) (see "System Board Components" section of the *Service Manual* for your computer).
- Remove and then reinstall all memory modules (see Memory).
- Remove and then reinstall any expansion cards, including graphics cards (see the "Removing PCI and PCI Express Cards" section for your computer).

Eliminate interference — Some possible causes of interference are:

- Power, keyboard, and mouse extension cables
- Too many devices connected to the same power strip
- Multiple power strips connected to the same electrical outlet

Printer Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

NOTE: If you need technical assistance for your printer, contact the printer's manufacturer.

Check the printer documentation — See the printer documentation for setup and troubleshooting information.

Ensure that the printer is turned on

Check the printer cable connections —

- See the printer documentation for cable connection information.
- Ensure that the printer cables are securely connected to the printer and the computer.

Test the electrical outlet — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

Verify that the printer is recognized by Windows —

Windows XP:

1. Click **Start→ Control Panel→ Printers and Other Hardware→ View installed printers or fax printers**.
2. If the printer is listed, right-click the printer icon.
3. Click **Properties→ Ports**. For a parallel printer, ensure that the **Print to the following port(s):** setting is **LPT1 (Printer Port)**. For a USB printer, ensure that the **Print to the following port(s):** setting is **USB**.

Windows Vista:

1. Click **Start** → **Control Panel**→ **Hardware and Sound**→ **Printer**.
2. If the printer is listed, right-click the printer icon.
3. Click **Properties and click Ports**.
4. Adjust the settings, as needed.

Reinstall the printer driver —

See the printer documentation for information on reinstalling the printer driver.

Scanner Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

NOTE: If you need technical assistance for your scanner, contact the scanner's manufacturer.

Check the scanner documentation — See the scanner documentation for setup and troubleshooting information.

Unlock the scanner — Ensure that your scanner is unlocked (if the scanner has a locking tab or button).

Restart the computer and try the scanner again

Check the cable connections —

- See the scanner documentation for information on cable connections.
- Ensure that the scanner cables are securely connected to the scanner and the computer.

Verify that the scanner is recognized by Microsoft Windows —

Windows XP:

1. Click **Start**→ **Control Panel**→ **Printers and Other Hardware**→ **Scanners and Cameras**.
2. If your scanner is listed, Windows recognizes the scanner.

Windows Vista:

1. Click **Start** → **Control Panel**→ **Hardware and Sound**→ **Scanners and Cameras**.
2. If the scanner is listed, Windows recognizes the scanner.

Reinstall the scanner driver — See the scanner documentation for instructions.

Sound and Speaker Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

No sound from speakers

NOTE: The volume control in MP3 and other media players may override the Windows volume setting. Always check to ensure that the volume on the media player(s) has not been turned down or off.

Check the speaker cable connections — Ensure that the speakers are connected as shown on the setup diagram supplied with the speakers. If you purchased a sound card, ensure that the speakers are connected to the card.

Ensure that the subwoofer and the speakers are turned on — See the setup diagram supplied with the speakers. If your speakers have volume controls, adjust the volume, bass, or treble to eliminate distortion.

Adjust the Windows volume control — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and

that the sound is not muted.

Disconnect headphones from the headphone connector — Sound from the speakers is automatically disabled when headphones are connected to the computer's front-panel headphone connector.

Test the electrical outlet — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

Eliminate possible interference — Turn off nearby fans, fluorescent lights, or halogen lamps to check for interference.

Run the speaker diagnostics

Reinstall the sound driver

Run the Hardware Troubleshooter — See Hardware Troubleshooter.

No sound from headphones

Check the headphone cable connection — Ensure that the headphone cable is securely inserted into the headphone connector (see the *Setup and Quick Reference Guide* that ships with your computer for more information).

Adjust the Windows volume control — Click or double-click the speaker icon in the lower-right corner of your screen. Ensure that the volume is turned up and that the sound is not muted.

Video and Monitor Problems

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage on www.dell.com at www.dell.com/regulatory_compliance.

CAUTION: If your computer came with a PCI graphics card installed, removal of the card is not necessary when installing additional graphics cards; however, the card is required for troubleshooting purposes. If you remove the card, store it in a safe and secure location. For information about your graphics card, go to support.dell.com.

The screen is blank

NOTE: For troubleshooting procedures, see the monitor's documentation.

The screen is difficult to read

Check the monitor cable connection —

- Ensure that the monitor cable is connected to the correct graphics card (for dual graphics card configurations).
- If you are using the optional DVI-to-VGA adapter, ensure that the adapter is correctly attached to the graphics card and monitor.
- Ensure that the monitor cable is connected as shown on the setup diagram for your computer.
- Remove any video extension cables and connect the monitor directly to the computer.
- Swap the computer and monitor power cables to determine if the monitor's power cable is defective.
- Check the connectors for bent or broken pins (it is normal for monitor cable connectors to have missing pins).

Check the monitor power light —

- If the power light is lit or blinking, the monitor has power.
- If the power light is off, firmly press the button to ensure that the monitor is turned on.
- If the power light is blinking, press a key on the keyboard or move the mouse to resume normal operation.

Test the electrical outlet — Ensure that the electrical outlet is working by testing it with another device, such as a lamp.

Check the diagnostic lights —

See Diagnostic Lights.

Check the monitor settings — See the monitor documentation for instructions on adjusting the contrast and brightness, demagnetizing (degaussing) the monitor, and running the monitor self-test.

Move the subwoofer away from the monitor — If your speaker system includes a subwoofer, ensure that the subwoofer is positioned at least 60 centimeters (2 feet) away from the monitor.

Move the monitor away from external power sources — Fans, fluorescent lights, halogen lamps, and other electrical devices can cause the screen image to appear *shaky*. Turn off nearby devices to check for interference.

Rotate the monitor to eliminate sunlight glare and possible interference

Adjust the Windows display settings —

Windows XP:

1. Click **Start**→ **Control Panel**→ **Appearance and Themes**.
2. Click the area you want to change or click the **Display** icon.
3. Try different settings for **Color quality** and **Screen resolution**.

Windows Vista:

1. Click **Start** → **Control Panel**→ **Hardware and Sound**→ **Personalization**→ **Display Settings**.
2. Adjust **Resolution** and **Colors settings,** as needed.

3D image quality is poor

Check the graphics card power cable connection — Ensure that the power cable for the graphics card(s) is correctly attached to the card.

Check the monitor settings — See the monitor documentation for instructions on adjusting the contrast and brightness, demagnetizing (degaussing) the monitor, and running the monitor self-test.

Only part of the display is readable

Connect an external monitor —

1. Shut down your computer and connect an external monitor to the computer.
2. Turn on the computer and the monitor and adjust the monitor brightness and contrast controls.

If the external monitor works, the computer display or video controller may be defective. Contact Dell (see Contacting Dell).

Dell Technical Update Service

The Dell Technical Update service provides proactive e-mail notification of software and hardware updates for your computer. The service is free and can be customized for content, format, and how frequently you receive notifications.

To enroll for the Dell Technical Update service, go to **support.dell.com / technicalupdate**.

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Dell™ OptiPlex™ 760 Service Manual

- Module Bay

Module Bay

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

You can install a Dell™ removable device such as a floppy drive, optical drive, or second hard drive in the module bay. You can also install an airbay (filler blank) in the bay if you do not plan to install a drive.

Your Dell computer ships with either an optical drive or an airbay (filler blank) installed in the module bay. The airbay is held in the module bay with a security screw only. You can secure a optical drive in the module bay using two methods:

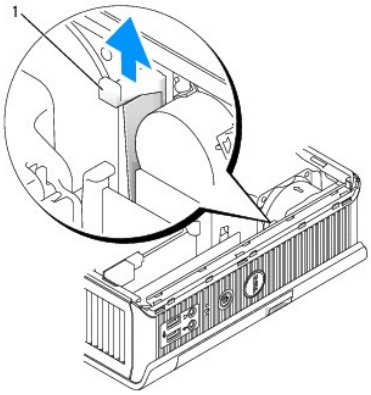
- Locking switch (accessed by removing the computer cover)
- Security screw (packaged separately)

See Securing a Device in the Module Bay for more information about securing a device in your computer.

CAUTION: To prevent damage to devices, place them in a safe, dry place when they are not installed in the computer. Avoid pressing down on them or placing heavy objects on top of them.

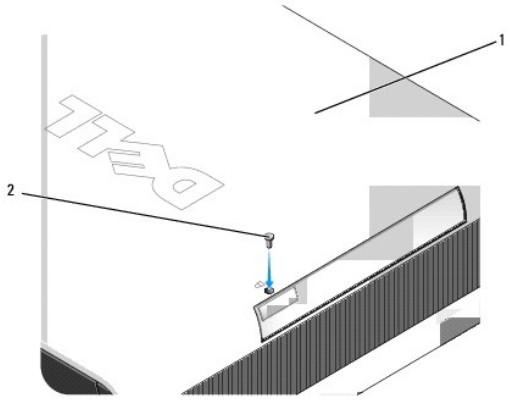
Removing and Installing a Device When Your Computer Is Turned Off

1. If the module bay contains a device that is locked with the locking switch:
   a. Remove the cover (see Removing the Computer Cover)
   b. Lift the module locking switch to the unlocked position.



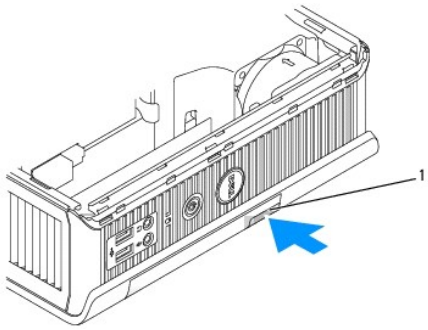
1	module locking switch

2. If the module bay contains an airbay, remove the security screw and pull the airbay out of the module bay and skip to step 5.



1	bottom of computer	2	security screw

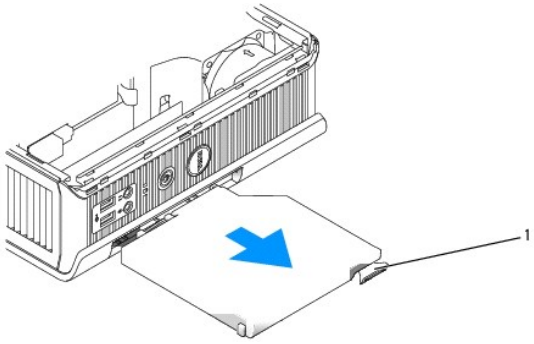
3. Press the device latch release so that the latch release pops out.



1	drive release latch

CAUTION: Do not place any heavy objects on top of the computer. Doing so may bend the chassis and cause difficulty in removing a module device.

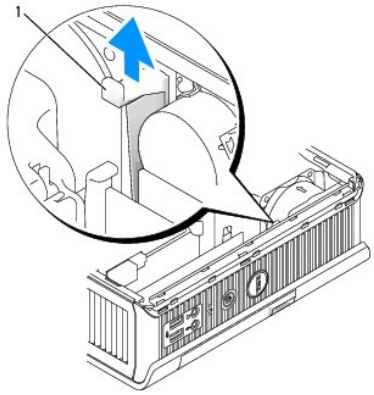
4. Pull the device by the latch release to remove the device from the module bay.



1	latch release

5. Slide the new device into the module bay.
6. If desired, you may lock the new device in the module bay by moving the module locking switch to the locked position (you must remove the computer cover to use the locking switch).
7. If you removed the cover to lock the device in the module bay, replace the computer cover (see Replacing the Computer Cover).

1	bottom of computer	2	security screw



Removing and Installing a Device When Your Computer Is Running

NOTE: Installing and removing a device while the computer is running may not be applicable to all SATA operating modes. To enable this feature, set **SATA Operation** to **AHCI** or **RAID Operation** in the system setup program.

Microsoft® Windows®

1. To remove a device installed in the module bay, double-click the **Safely Remove Hardware** icon on the taskbar.
2. In the list of devices that appears on your screen, click the device you want to eject.

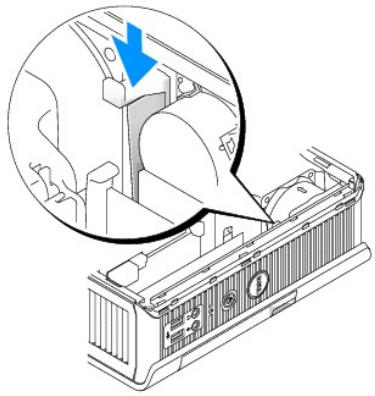
   NOTE: You cannot remove a device if your computer is turned on and the device is locked in the module bay. You must shut down the computer and follow the steps in Removing and Installing a Device When Your Computer Is Turned Off to remove a locked device.

CAUTION: Do not place any heavy objects on top of the computer. Doing so may bend the chassis and cause difficulty in removing a module device.

3. When a computer message indicates that you can remove the device, remove the device from the module bay.
4. Slide the new device into the module bay.

Securing a Device in the Module Bay

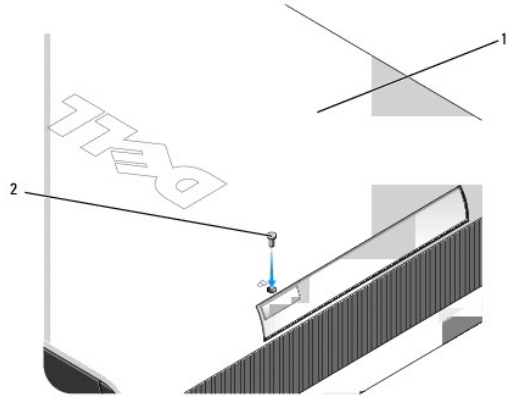
1. Remove the computer cover (see Removing the Computer Cover).
2. Gently press the module locking switch down until it locks into place.



3. Replace the computer cover (see Replacing the Computer Cover).

   The module cannot be removed from the computer until you lift the module locking switch into its unlocked position.

4. You may also secure a device in the module bay by using a security screw (packaged separately), accessed from the bottom of the computer.



1	bottom of computer	2	security screw

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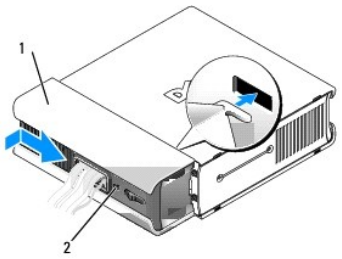
Dell™ OptiPlex™ 760 Service Manual

Cable Cover (Optional)

Cable Cover (Optional)

Attaching the Cable Cover

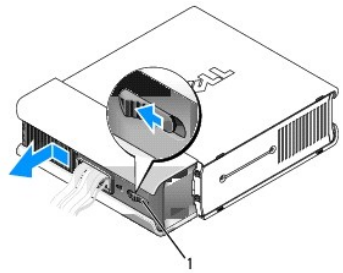
1. Ensure that all external device cables are threaded through the hole in the cable cover.
2. Connect all device cables to the connectors on the back of the computer.
3. Hold the bottom of the cable cover so as to align the tabs with the slots on the computer's back panel.
4. Insert the tabs into the slots and slide the cover to align the ends of the cover with the ends of the chassis (see the illustration) until the cable cover is securely positioned.
5. Install a security device in the security cable slot (optional).



1	cable cover	2	security cable slot

Removing the Cable Cover

1. If a security device is installed in the security cable slot, remove the device.



1	release button

2. Slide the release button, grasp the cable cover, and slide the cover sideways as shown until it stops, and then lift the cable cover up and away.

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Dell™ OptiPlex™ 760 Service Manual

- Heat Sink and Processor

Heat Sink and Processor

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

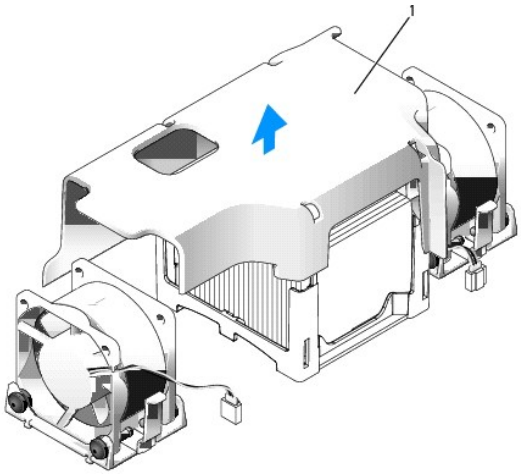
WARNING: To guard against electrical shock, always unplug your computer from the electrical outlet before removing the cover.

CAUTION: When replacing the processor, do not touch the underside of the new processor.

CAUTION: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.

Removing the Processor

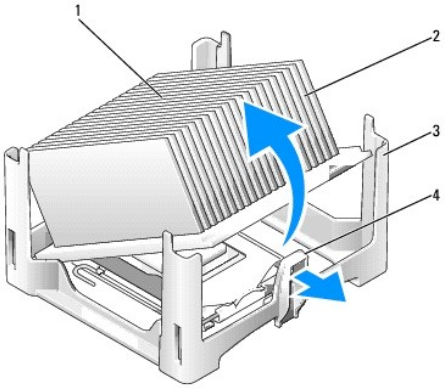
1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the fan shroud by lifting the fan shroud up and away from the computer.



1	fan shroud

WARNING: The heat sink can get extremely hot. Ensure that the heat sink has had sufficient time to cool before you touch it.

4. Remove the heat sink:
   a. Pull the release lever on the retention base away from the heat sink until the heat sink is released.



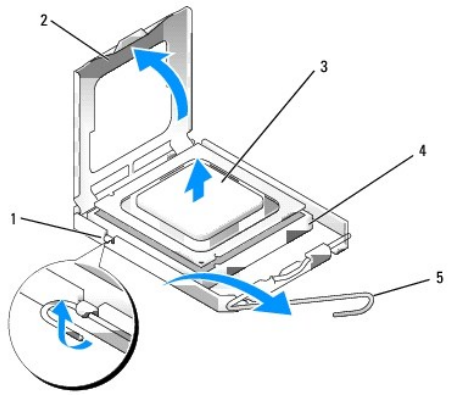
1	top of heat sink	2	heat sink
3	retention base	4	release tab

b. Gently lift the heat sink from the processor.

c. Lay the heat sink down on its top, with the thermal grease facing upward.

△ **CAUTION: Unless a new heat sink is required for the new processor, reuse the original heat sink assembly when you replace the processor.**

5. Open the processor cover by sliding the release lever from under the center cover latch on the socket. Then pull the lever back to release the processor.



1	center cover latch	2	processor cover
3	processor	4	socket
5	release lever		

△ **CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.**

△ **CAUTION: When replacing the processor, do not touch any of the pins inside the socket or allow any objects to fall on the pins in the socket.**

6. Gently remove the processor from the socket.

7. Leave the release lever extended in the release position so that the socket is ready for the new processor.

Installing the Processor

1. Unpack the new processor, being careful not to touch the underside of the processor.

2. If the release lever on the socket is not fully extended, move it to that position.

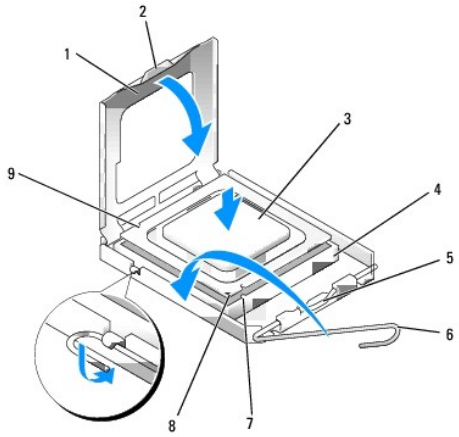
3. Orient the front and rear alignment-notches on the processor with the front and rear alignment-notches on the socket.

4. Align the pin-1 corners of the processor and socket.

CAUTION: To avoid damage, ensure that the processor aligns properly with the socket, and do not use excessive force when you install the processor.

5. Set the processor lightly in the socket and ensure that the processor is positioned correctly.

6. When the processor is fully seated in the socket, pivot the release lever back toward the socket until it snaps into place to secure the processor.



1	processor cover	2	tab
3	processor	4	processor socket
5	center cover latch	6	release lever
7	front alignment-notch	8	socket and processor pin-1 indicator
9	rear alignment-notch		

If you are installing a processor replacement kit from Dell, return the processor to Dell in the same package in which your replacement kit was sent.

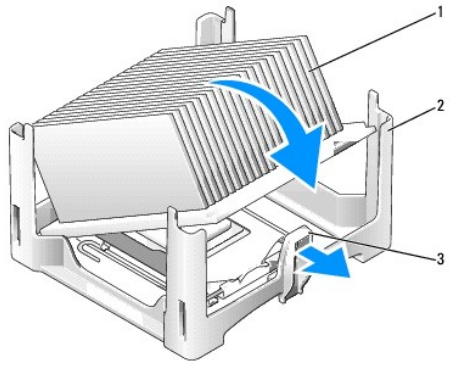
CAUTION: Ground yourself by touching an unpainted metal surface on the back of the computer.

7. Clean the thermal grease from the bottom of the heat sink.

CAUTION: Ensure that you apply new thermal grease. New thermal grease is critical for ensuring adequate thermal bonding, which is a requirement for optimal processor operation.

8. Apply the new thermal grease to the top of the processor.

9. Place one end of the heat sink under the tab on the retention base on the side opposite the release lever.



1	heat sink	2	retention base

3	release lever		

10. Lower the heat sink onto the processor at a 45-degree angle so that one end of the heat sink fits securely under the tab opposite the release tab on the retention base.

11. Re-assemble the shroud.

12. Replace the computer cover (see Replacing the Computer Cover).

13. Replace the cable cover, if used (see Attaching the Cable Cover).

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Dell™ OptiPlex™ 760 Service Manual

- Chassis Intrusion Switch

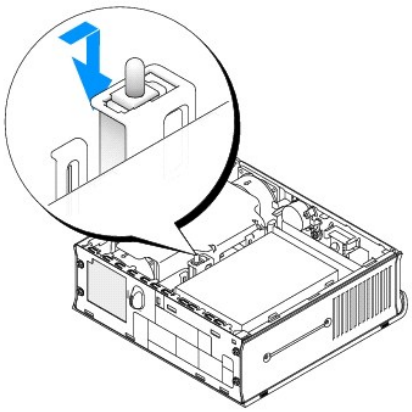
Chassis Intrusion Switch

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Chassis Intrusion Switch

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Disconnect the chassis intrusion switch cable from the system board by using two fingers to squeeze the release mechanism on one side of the connector as you pull to disconnect the cable connector.
4. Slide the chassis intrusion switch out of its slot in the metal bracket, and then push it down through the square hole in the bracket to remove the switch and its attached cable from the computer.

   NOTE: You may feel a slight resistance as you slide the switch out of the slot.



Replacing the Chassis Intrusion Switch

1. Gently insert the switch from underneath the metal bracket into the square hole in the bracket, and then slide the chassis intrusion switch into its slot until you feel it snap securely into place.
2. Reconnect the cable to the system board.
3. Replace the computer cover (see Replacing the Computer Cover).
4. If you are using a computer stand, attach it to the computer.

Resetting the Chassis Intrusion Detector

1. Turn on (or restart) your computer.
2. When the DELL™ logo appears, press <F12> immediately.

   If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft® Windows® desktop. Then shut down your computer and try again.

3. Select **System Setup**.

4. Select **Security→Chassis Intrusion** and then select the **Clear Intrusion Warning** option to reset the chassis intrusion detector. Change the setting to **On**, **On-Silent**, or **Disabled**.

NOTE: The default setting is **On-Silent**.

5. Save the settings and exit **System Setup**.

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Dell™ OptiPlex™ 760 Service Manual

- Drives

Drives

Your computer supports:

- One SATA (serial ATA) hard drive
- One optional Dell D-module optical drive, second hard drive, or floppy drive in the module bay (see Module Bay for information on installing and removing devices in the module bay).

General Installation Guidelines

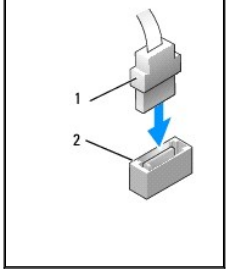
NOTE: For information on installing D-module drives, see the documentation that came with your optional device.

Connecting Drive Cables

When you install a drive, you connect two cables—a DC power cable and a data interface cable—to the back of the drive.

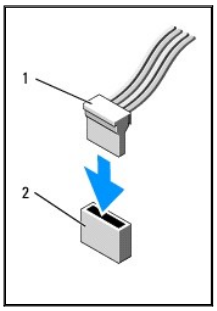
Data Interface Connectors

SATA Connector



1	data interface cable connector	2	data interface connector

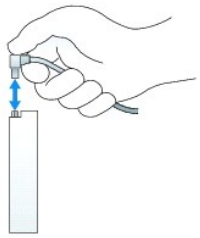
Power Cable Connectors



1	power cable	2	power input connector

Connecting and Disconnecting Drive Cables

When connecting and disconnecting a SATA data cable, hold the cable by the black connector at each end. When removing a cable with a pull-tab, grasp the colored pull-tab and pull until the connector detaches.



Hard Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

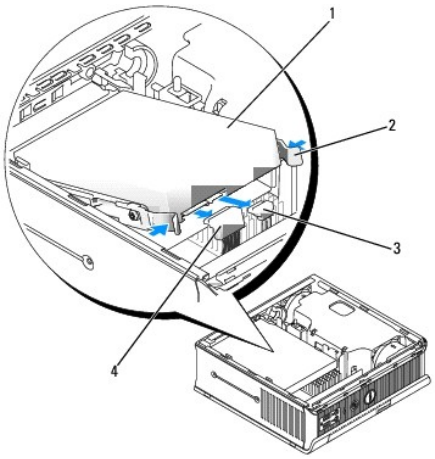
WARNING: To guard against electrical shock, always unplug your computer from the power supply before removing the hard drive.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

CAUTION: To avoid damage to the drive, do not set it on a hard surface. Instead, set the drive on a surface, such as a foam pad, that will sufficiently cushion it.

Removing the Hard Drive

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Disconnect the power and data cables from the hard drive.
4. Press the plastic drive rails towards each other and slide the drive slightly forward.
5. Rotate the hard drive up and away from the computer.



1	hard drive	2	drive rails (2)
3	data cable connector	4	power cable connector

Installing a Hard Drive

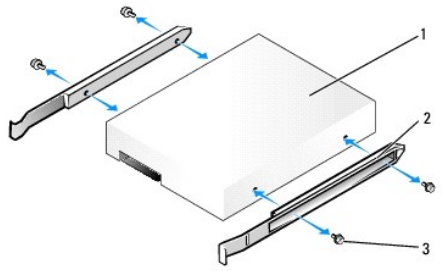
1. Follow the procedures in Working on Your Computer.

2. Remove the computer cover (see Removing the Computer Cover).

3. If you are installing a new drive, rather than replacing an already installed drive:

   a. Check the documentation for the drive to verify that the drive is configured for your computer.

   b. Attach the plastic drive rails—located inside the cover—to the new drive and skip to step 6.



1	drive	2	drive rails (2)
3	screws (4)		

CAUTION: If you are replacing a hard drive that contains data you want to keep, back up your files before you begin this procedure.

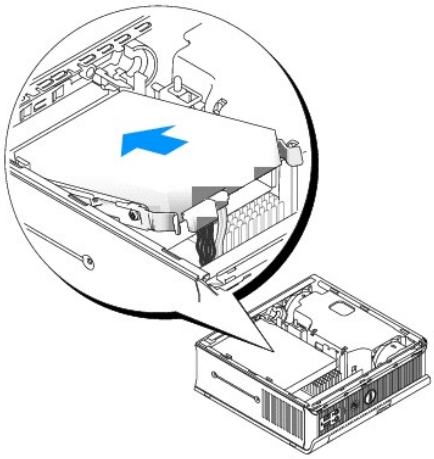
4. Remove the installed hard drive (see Removing the Hard Drive).

5. Remove the four screws that secure the drive rails to the existing hard drive, and attach the drive rails to the replacement hard drive.

CAUTION: Serial ATA data and power connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. When connecting cables to a drive, ensure that the connectors are oriented properly before you attach the cables to the drive.

6. Slide the hard drive into the hard drive bracket.

7. Attach the data and power cables to the hard drive connectors, ensuring that the connectors are properly oriented before connecting them.



8. Replace the computer cover (see Replacing the Computer Cover).

9. Replace the cable cover, if used.

10. See the documentation that came with the drive for instructions on installing any software required for drive operation.

11. Reboot the computer.

12. Partition and logically format your drive before you proceed to the next step.

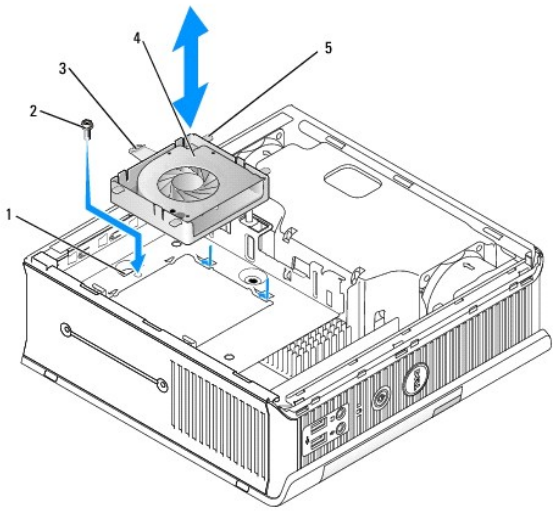
For instructions, see the documentation that came with your operating system.

13. Test the hard drive by running the Dell Diagnostics (see Dell Diagnostics).
14. Install your operating system on the hard drive.

    For instructions, see the documentation that came with your operating system.

Removing the Hard-Drive Fan

1. Follow the instructions in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Remove the hard drive (see Removing the Hard Drive).
4. Remove the screw that secures the fan release tab to the hard-drive bracket.
5. Press down on the fan release tab, and then slide the fan towards the front of the computer so that its side tabs are free of the corresponding slots in the hard drive bracket.
6. Gently lift to remove the fan from the hard-drive bracket.
7. Disconnect the fan cable from the FAN_HDD connector on the system board.



1	hard-drive bracket	2	screw
3	fan release tab	4	fan
5	side tab		

Replacing the Hard-Drive Fan

1. Connect the hard-drive fan cable to the FAN_HDD connector on the system board.
2. Align the release tab and the four side tabs on the fan with the five corresponding slots on the hard drive bracket.
3. Slide the release tab beneath the metal housing covering its slot, and then slide the fan towards the back of the computer.
4. Replace the screw that secures the fan release tab to the hard drive bracket.
5. Replace the hard drive (see Installing a Hard Drive).
6. Replace the computer cover (see Replacing the Computer Cover).

7. Replace the cable cover, if used.

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Dell™ OptiPlex™ 760 Service Manual

- System Fans

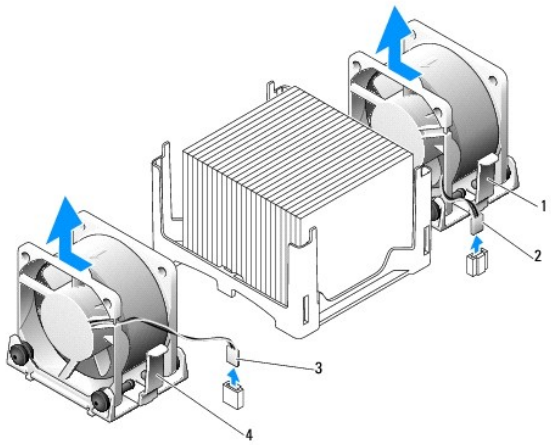
System Fans

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Removing the System Fans

1. Follow the procedures in Working on Your Computer.
2. Remove the cover of your computer (see Removing the Computer Cover).
3. Remove the fan shroud by lifting the fan shroud up and away from the computer.
4. Facing the back of the computer, remove the four screws that secure the system-board sled to the computer chassis.
5. Slide the system-board sled towards the back of the computer and lift it up and away from the computer chassis.
6. Disconnect the fan cables from the system board.
7. To remove the front fan, press the fan release tab and slide the fan away from the memory modules.



1	back fan release tab	2	back fan power cable
3	front fan release tab	4	front fan power cable

8. To remove the back fan, press the fan release tab and slide the fan away from the drives.

Installing the System Fans

1. To replace the fan, follow the removal procedures in the reverse order.
2. Replace the computer cover (see Replacing the Computer Cover).
3. Turn on the computer.

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Dell™ OptiPlex™ 760 Service Manual

- Power Button

Power Button

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

Removing the Power Button

1. Follow the procedures in Working on Your Computer.
2. Remove the computer cover (see Removing the Computer Cover).
3. Gently squeeze the tabs securing the power button assembly to the front of the chassis, and pull the assembly away from the front of the chassis.
4. Lift the power button up until the alignment tab on the bottom of the power button assembly is free from the chassis, and remove the power button from the chassis.

Replacing the Power Button

1. Align the tab on the bottom of the power button assembly with the corresponding slot in the front of the chassis, and push the tab into the slot.
2. Gently squeeze the tabs on the power button and push the button into the chassis until the tabs lock into place.
3. Replace the computer cover (see Replacing the Computer Cover).

Dell™ OptiPlex™ 760 Service Manual

- Speakers

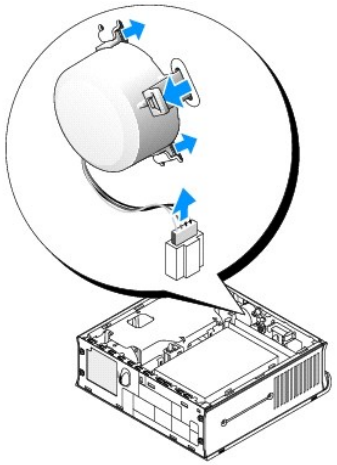
Speakers

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

Removing a Speaker

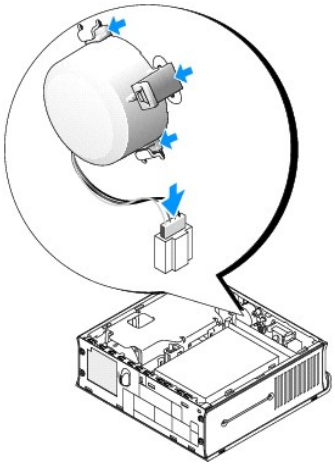
1. Follow the procedures in Working on Your Computer.
2. Remove the cover of your computer (see Removing the Computer Cover).
3. Press the speaker release tab and slide the speaker up.
4. Release the speaker from the securing tabs on the chassis.
5. Disconnect the speaker cable from the INT_SPEAKER connector on the system board and set the speaker aside.



6. Replace the computer cover.
7. Turn on power to the computer.

Installing a Speaker

1. Follow the procedures in Working on Your Computer.
2. Remove the cover of your computer (see Removing the Computer Cover).
3. Connect the speaker cable to the INT_SPEAKER connector on the system board.
4. Insert the speaker into the chassis of the computer.



5. Replace the computer cover.
6. Turn on power to the computer.

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Ultra Small Form Factor

Dell™ OptiPlex™ 760 Service Manual

- Removing the Computer Cover
- Inside Your Computer
- System Board Components
- Dell Badge

CAUTION: Do not place your monitor on the computer. Use a monitor stand.

CAUTION: When setting up your computer, secure all cables toward the back of your work area to prevent the cables from being pulled, tangled, or stepped on.

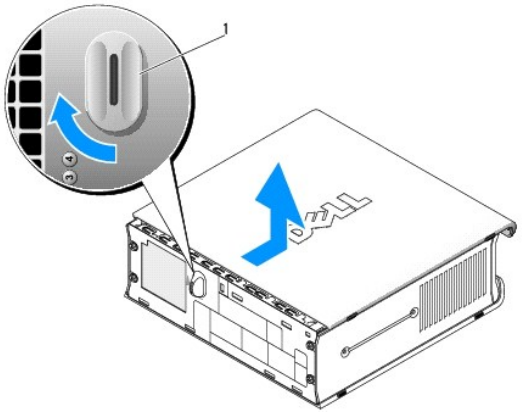
NOTE: If you want to orient your computer under a desk top or on a wall surface, use the optional wall-mount bracket. To order this bracket, contact Dell (see Contacting Dell).

Removing the Computer Cover

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.

1. Follow the procedures in Working on Your Computer.
2. If applicable, remove the cable cover, (see Cable Cover (Optional)).
3. Remove the computer cover:
   a. Rotate the cover release knob in a clockwise direction.



1	release knob

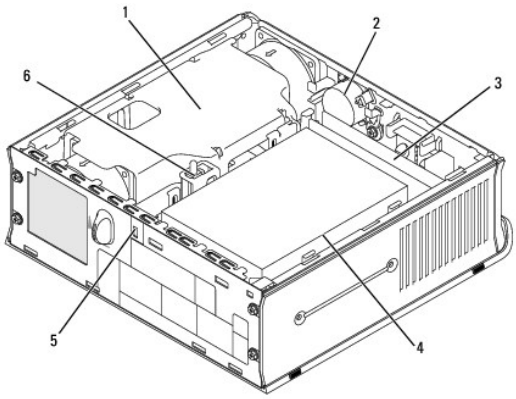
   b. Slide the computer cover forward by 1 cm (½ inch), or until it stops, and then raise the cover.

Inside Your Computer

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

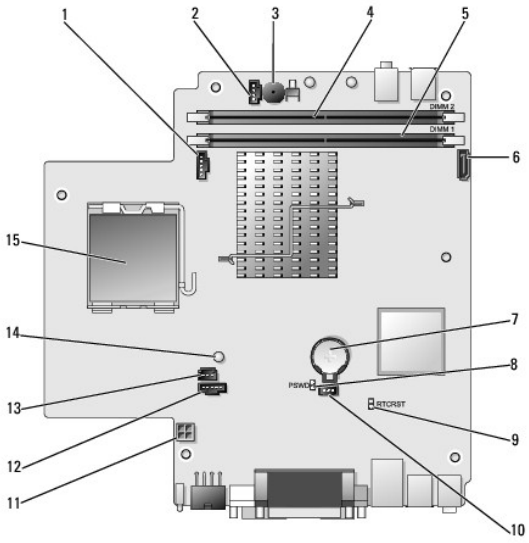
WARNING: To avoid electrical shock, always unplug your computer from the AC power adapter before removing the cover.

CAUTION: To prevent static damage to components inside your computer, discharge static electricity from your body before you touch any of your computer's electronic components. You can do so by touching an unpainted metal surface on the computer chassis.



1	fan shroud/heat sink assembly	2	speaker (optional)
3	memory modules (2)	4	hard drive
5	security cable slot	6	chassis intrusion switch

System Board Components



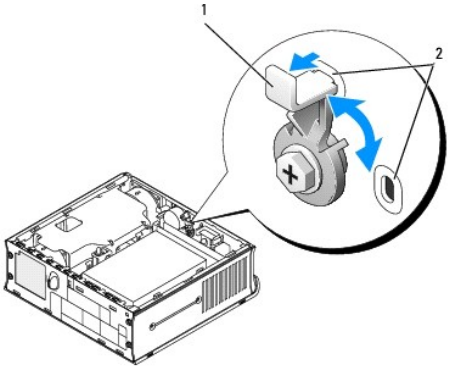
1	fan connector (FAN_FRONT)	2	internal speaker connector (INT_SPKR)
3	system board speaker (BEEP)	4	channel B memory connector (DIMM_2)
5	channel A memory connector (DIMM_1)	6	SATA data cable connector (SATA0)
7	battery (BATT)	8	password jumper (PSWD)
9	clear CMOS jumper (RTCRST)	10	hard drive fan connector (FAN_HDD)
11	hard drive power connector (SATA_PWR)	12	fan connector (FAN_REAR)
13	intrusion switch connector (INTRUDER)	14	power light (AUX_Power_LED)
15	processor (CPU)		

Dell Badge

WARNING: Before working inside your computer, read the safety information that shipped with your computer. For additional safety best practices information, see the Regulatory Compliance Homepage at www.dell.com/regulatory_compliance.

The Dell badge on the front of your computer can be rotated. To rotate the badge:

1. Remove the computer cover (see Removing the Computer Cover).
2. Pull on the tab away from the chassis and rotate the badge to the desired position.
3. Ensure that the tab is secured in the slot.



1	release tab in slot	2	slots (2)

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Dell™ OptiPlex™ 760 Service Manual

Ultra Small Form Factor Computer

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Removing and Replacing Parts
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Chassis Intrusion Switch
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Speakers
Memory
Battery
Replacing the System Board
Replacing the Computer Cover

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

If you purchased a Dell™ n Series computer, any references in this document to Microsoft® Windows® operating systems are not applicable.

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Models: DCTR, DCNE, DCSM, and DCCY

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